

ESSAYS IN MEDICAL SOCIOLOGY



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IN
MEDICAL SOCIOLOGY

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THE INFLUENCE OF WOMEN IN THE
PROFESSION OF MEDICINE

*Address given at the Opening of the Winter Session of the London School
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THE INFLUENCE OF WOMEN IN THE PROFESSION OF MEDICINE

IN the short time that we meet together to-day I will ask you to let me dwell upon the way in which the most beneficial influence of women in the medical profession may be exercised. I wish also to point out certain dangers, as well as advantages, with which medical study is now surrounded.

The avenues by which all may enter into the profession are now so much more widely thrown open that there is little difficulty in the way of any man or woman who may wish to acquire a legal right to practise medicine. In Paris all the public medical institutions, both college and hospital, are thrown open to students without distinction of sex. Not only as ordinary students, but as internes and externes, sex is no longer regarded there as a barrier to opportunity and position. The democratic principle is everywhere steadily gaining ground, and the individual allowed to try his strength in the great battle of life. Large numbers of women are taking advantage of this wider individual liberty to enter the medical profession. In Great Britain our

seventy-three registered lady-doctors are few compared with the 3,000 in the United States, yet the nine students who are now connected with our London school, with, in addition, the Edinburgh classes, the Dublin students, and the latest fact that the Glasgow Medical College has just opened its doors to women, clearly indicate that the movement has taken sturdy root in our country, and when our English work has been carried on for forty years, there is every probability that our British lady-doctors will equal numerically our kinsfolk across the ocean.

I think, therefore, that all will see the importance of considering the future of this growing army of medical women, and I particularly desire that our students of medicine should realize the far-reaching character, the social effects, of this medical career which they are entering on. It is quite certain that the wide adoption of the medical profession by women cannot continue to be an insignificant matter; it must exercise an appreciable effect on future society for good or evil.

If we were children entering upon a course of education, it would be premature to take stock of the results of education, and cast a far-seeing glance into the future.

But it is different with adult women—women of education, somewhat impatient of restraint—entering upon a larger liberty, and legitimately jealous of any interference with that liberty. It is therefore imperative upon us to consider very seriously this

matter of self-guidance at the outset of medical education, to take in a large view of future responsibility, and ask ourselves that most important question respecting a medical training: What will be its effect?

The flippant or superficial person may at once reply: Our object is to gain money and pursue a remunerative calling by looking after sick people. Women find so much difficulty in honestly supporting themselves, that it is reason enough that they can in this way do so, and the labourer is worthy of his hire. But I say emphatically that anyone who makes pecuniary gain the chief motive for entering upon a medical career is an unworthy student; he is not fit to become a doctor, and he will be a labourer not worthy of his hire. What should be thought of a statesman who aspired to the direction of national affairs on account of the salary of £10,000? The nobleness of motive must enlarge with the nobleness of occupation, or the unworthy occupier sinks to a degradation measured by the height to which his career should have raised him.

Now, there is no career nobler than that of the physician. The progress and welfare of society is more intimately bound up with the prevailing tone and influence of the medical profession than with the status of any other class of men. This exceptional influence is not only due to the great importance of dealing with the issues of life and death in health and disease, but it is still more owing to the fact that the body and the mind are

so inseparably blended in the human constitution, that we cannot deal with one portion of this compound nature without in more or less degree affecting the other. Our ministrations to body and soul cannot be separated by a sharply-defined line. The arbitrary distinction between the physician of the body and the physician of the soul—doctor and priest—tends to disappear as science advances. Every branch of medicine involves moral considerations, both as regards the practitioner and the patient. Even the amputation of a limb, the care of a case of fever, the birth of a child, all contain a moral element which is evident to the clear understanding, and which cannot be neglected without injury to the doctor, to the individual, and to society. But probably it will be generally agreed that the hope of gaining money must not be the primary motive for choosing a medical career; but that interest in the line of study and kind of life, with a perception of the wide and beneficent influence which it can exert, should form the determining motive for becoming a physician.

If, then, we recognise that, although just reward for honest labour is fair, we must not enter upon medicine as a trade for getting money, but from a higher motive, this motive, as it influences conduct, becomes on that account a moral motive or an ideal which should guide our future practical life as physicians. Now, this ideal necessitates a distinct conception of what is right or wrong for us, in medicine, both as human beings and as women.

Simply sensuous life, without an ideal or without higher principles of action than the limited needs of every day, tends to degrade the individual and all who surround him.

What we need is a clear idea of what is really right or wrong, with the reasons on which the judgment is based, instead of a confused notion or a vague and ever-shifting standard.

No woman student of medicine can safely ignore this subject. It is a vital one for us, and only a true answer to it will make our entrance into the profession a marked advance in social progress.

I do not attempt to disguise the difficulty of laying down the law of right and wrong in medicine; not only because medicine, as every other part of social life, is subject to the growth of evolution, but because in a state of society that has not yet succeeded in moulding itself on the fundamental principles of Christianity, we are involved in faulty social conditions which prevent us from embodying our moral perceptions in every phase of practical life. But, remember, thought and endeavour may live a righteous life, no matter what faulty conditions surround us. When we have a clear view of right and wrong, we can mentally repudiate whatever appears to violate the moral law. We can strenuously resist the deadening force of habitual wrong-doing, and never cease the effort to find some way of shaping our mental protest into practical opposition to all forms of immorality.

You will see in the course of your medical studies

—particularly if you study abroad—much to shock your enlightened intellect and revolt your moral sense. In practice also you will be subjected to strong temptations of the most varied character. But just for the reason that as women we ought to see more clearly the broken bridge or approaching danger, in the onward rush of the male intellect, I now dwell on our special responsibility, and shall endeavour to give the reasons for it.

My object is not to limit, but to enlarge our work in medicine, when I seek to define our ideal. It is true that the great object of this human life of ours is essentially one for every human being, man or woman, barbarous or civilized. It is to become a nobler creature, and to help all others to a higher human status during this brief span of earthly life. But as variety in unity is a law of creation, so there are infinite methods of progress, producing harmony instead of monotony, when the individual or classes of individuals are true to the guiding principles of their own nature.

For the ideal of every creature must be found in the relation of its own nature to the universe around it. Right and wrong are based upon the sound understanding of this positive foundation. It is this fact of variety in unity, in the progress of the race, which justifies the hope that the entrance of women into the medical profession will advance that profession.

In order to carry out this noble aspiration, we must understand what the special contribution is,

that women may make to medicine, what the aspect of morality which they are called upon to emphasize.

It is not blind imitation of men, nor thoughtless acceptance of whatever may be taught by them that is required, for this would be to endorse the widespread error that the race is men. Our duty is loyalty to right and opposition to wrong, in accordance with the essential principles of our own nature.

Now, the great essential fact of woman's nature is the spiritual power of maternity.

We should do miserable injustice to this great fact if, looking at it with semiblind eyes, we only see the shallow material aspect of this remarkable speciality. It is the great spiritual life underlying the physical which gives us our true womanly ideal.

What are the spiritual principles necessarily involved in this special creation of one-half the race—principles which lie within the material facts of gestation and the care of infancy and childhood, which constitute the distinctive material domain of women?

They are the subordination of self to the welfare of others; the recognition of the claim which helplessness and ignorance make upon the stronger and more intelligent; the joy of creation and bestowal of life; the pity and sympathy which tend to make every woman the born foe of cruelty and injustice; and hope—*i.e.*, the realization of the unseen—which foresees the adult in the infant, the future in the present.

All these are great moral tendencies, and they are

necessarily involved in the mighty potentiality of maternity. They lay upon women the weighty responsibility of becoming more and more the moral guides in life's journey. Women are called upon very specially to judge all practical action as right or wrong, and to exercise influence for this high morality in whatever direction it can be most powerfully exerted.

We see the indication of this providential inherited impulse to moral action, in the great and increasing devotion of women to the relief of social suffering and their sturdy opposition to wrong-doing, which form a distinguishing characteristic of our age. These spiritual mothers of the race are often more truly incarnations of the grand maternal life, than those who are technically mothers in the lower physical sense.

With sound intellectual growth the range of moral influence increases. But such sound growth can only take place under the guidance of moral principle; for moral perception becomes reason as the intellectual faculties grow, and reason is the true light for all. It is in this high moral life, enlarged by intelligence, that the ideal of womanhood lies. It is through the moral, guiding the intellectual, that the beneficial influence of woman in any new sphere of activity will be felt.

Thus, from their inherited tendencies, as well as from the existent individuality of their nature, women must seek a high moral standard as their ideal, and acknowledge the supremacy of right over every

sphere of intellectual activity. The highest type of moral excellence which we can find in the age in which we live, the beneficence which it exerts, the means by which it has been attained, form so many landmarks to guide us in our search for the right.

This very important method of growth has been well stated by Huxley, that brave fighter in the past for freedom of thought. He has laid down this weighty principle, that 'the past must be explained by the present.'

This principle is of very wide application.

What produces the noblest human creature now in our nineteenth century? What inspires hope? What sustains us most bravely to fight the battle of life? What makes life most worth living?

When we have ascertained these facts in the present, they will explain the past, and give the foundations of right for guidance in the future.

It is a noteworthy feature of the present day that some of our best men, witnessing the failure of so many panaceas for the intolerable evils that afflict society, are longing for that untried force—the action and co-operation of good women. 'Our only hope is in women!' is a cry that may sometimes be heard from the enlightened male conscience. But still more significant is the awakening of an increasing number of women themselves. They begin to realize that truth comes to us through imperfect human media, and is thus rendered imperfect; that every human teacher must be accepted for his suggestiveness only, not as absolute authority. Women are

thus rising above the errors of the past, above blind acceptance of imperfect authority, and are earnestly striving to learn the will of the Creator, and walk solely according to what they themselves, diligently seeking, can learn of that Divine will.

There is no line of practical work outside domestic life, so eminently suited to these noble aspirations as the legitimate study and practice of medicine. The legitimate study requires the preservation in full force of those beneficent moral qualities—tenderness, sympathy, guardianship—which form an indispensable spiritual element of maternity; whilst, at the same time, the progress of the race demands that the intellectual horizon be enlarged, and the understanding strengthened by the observation and reasoning which will give increased efficiency to those moral qualities.

The true physician must possess the essential qualities of maternity. The sick are as helpless in his hands as the infant. They depend absolutely upon the insight and judgment, the honesty and hopefulness, of the doctor.

The fact also that every human being we are called on to treat, is, like the infant and the child, soul as well as body, must never be forgotten. Successful treatment requires the insight which comes from recognition of these facts and the sympathy that they demand. In the infinite variety of human ailments the physician will find that she must often be the confessor of her patient, and the consulting-room should have the sacredness of the

Confessional, and she must always be the counsellor and guide.

In those two departments of medicine which seem to me peculiarly valuable to women physicians, which I shall refer to later—viz., midwifery and preventive medicine—it would be hard to say whether the moral or intellectual qualities of the physician were called most largely into play, so inseparably are they blended. What patience and hopefulness also are demanded in the lingering trial of chronic illness! What discrimination and union of gentleness and firmness these cases require! Then think of the children in our families! To the girls and boys, the young women and men, who grow up under our ministrations, what an inspirer of nobleness and purity, what a guardian from temptation the true physician can be!

Again, in the treatment of the poor, an immense demand is made upon our pity, patience, and courage. These poor victims of our social stupidity are often extremely trying. The faulty arrangements which compel us to see thirty, fifty even, in an hour exhaust the nervous system of the doctor. It requires faith and courage to recognise the real human soul under the terrible mask of squalor and disease in these crowded masses of poverty, and to resist the temptation to regard them as 'clinical material.' The attitude of the student and doctor to the sick poor is a real test of the true physician.

Having thus realized the profound adaptation of the nature of woman to the practice of the Art of

Healing, let us consider in what way the intellectual faculties may be strengthened, so as to give enlarged efficiency to the maternal qualities. In other words, how shall we become reliable doctors?

What I have hitherto dwelt on is the necessary attitude of mind or the atmosphere and light in which women physicians must breathe and work if they are to attain to their distinctive efficiency; let me now refer more particularly to the method of training for our practical work.

The intellectual training required for the physician is admirably adapted to supply deficiencies in the ordinary experience of women.

The intellectual characteristics which must be especially gained during student life are: the faculty of patient observation, exact statement of what is observed, and cautious deductions from these observations.

These qualities form the foundation of sound judgment and skilful medical practice. It is not a brilliant theorizer that the sick person requires, but the experience gained by careful observation and sound common-sense, united to the kindly feeling and cheerfulness which make the very sight of the doctor a cordial to the sick. If these necessary results of intellectual training can be secured in harmony with the moral structure of womanhood, then a step of real social progress is made by our study of medicine.

This necessity for making the most painstaking observation of facts, the foundation to be laid by the

student in every branch of her studies, is well illustrated in the life of Darwin, who writes thus to a friend: 'I have been hard at work for the last month in dissecting a little animal about the size of a pin's head, from the Chronos Archipelago, and I could spend another month and daily see more beautiful structure.' Of the value of this method of persistent labour, his friend gives this noteworthy testimony: 'Your sagacious father never did a wiser thing than devote himself to these years of patient toil. It is a remarkable instance of his scientific insight and courage that he saw the necessity of proper training and did not shrink from the labour of acquiring it.'

In medicine, anatomy, physiology and chemistry are the primary studies where that foundation of conscientious exactitude must be laid on which the skill of the future physician so largely depends.

The first and indispensable basis of medicine is anatomy, with which physiology is inseparably blended; for human physiology can only be properly studied in connection with the human structure, whose condition in health and disease forms the direct object of our profession. No student should be satisfied until she has most carefully followed out the structure of every region of that human body with whose life we shall have to deal. Careful anatomical study is the sure and indispensable preparation for that next advanced range of clinical observation, where pathology and therapeutics bring us into the direct study of the sick.

The more thoroughly the human organization is investigated, the more wonderful will the unapproachable mechanism for the use of human life be seen to be. We shall never regret any amount of time and care spent in acquiring the most intimate knowledge of human anatomy. For even if we never perform a surgical operation, the thorough knowledge of the human framework with whose aberrations we have to deal, gives a firm foundation for practice that nothing else can supply.

The thoughtless slashing of the delicate and complicated structure of the body, of which untrained students are sometimes guilty, is indicative of a careless, unconscientious future physician. If carelessness similar to what is sometimes observed in the dissecting-room were carried on in the chemical laboratory, life or limb would soon be sacrificed. Yet a thorough grounding in the structure of every vital organ is more indispensable to us than chemistry, important as the study of chemistry is. Let me here note how the moral element on which I have so strongly insisted comes into play in this the first of our medical studies. Reverence for this physical structure of ours should always be shown in the use and arrangements of the anatomical rooms. Carelessness and irreverence in this department of study exercise a really deteriorating influence on students of medicine. Respect for the material used, care in its disposition, and a decent covering for each work-table in the intervals of work, may seem small observances, but they exercise a large influence

over the moral training of the student when persistently carried out.

It does not enter into my present purpose to enlarge upon the right method of studying each branch of medicine, for that would require a series of discourses. But I must give an emphatic warning against the strange neglect of *human* physiology which I observe. This seems to proceed from the mistaken idea that necessary knowledge can be obtained from other organisms which bear a misleading resemblance to the human.

What I would insist upon is, that we should endeavour to make ourselves thoroughly acquainted with the nature and variations of healthy human physiology before we are perplexed with the changes of pathology.

Auscultation and percussion; observations of the healthy variations of the pulse, the tongue, the skin, and the various secretions, in as many healthy individuals, both adult and infant, as can be examined, compared, and recorded; the vital chemistry of the human tissues and secretions in health and disease; the modifying effects of temperament, heredity, idiosyncrasy, etc.—all this forms a department of human physiology, strangely neglected as a practical study, yet certainly of primary importance to the progress of medicine.

But I must pass on to what is my immediate purpose—viz., the relation of women to medicine. Having dwelt on the moral and intellectual advantages of medical study, I must refer to another

aspect of the subject—viz., the dangers which meet our earnest students.

Dr. Carpenter has recorded the wide-spread recognition of this dangerous aspect of medical study when he says: 'There seems to be something in the process of training students for the medical profession which encourages in them a laxity of thought and expression that too frequently ends in a laxity of principle and of action'; and he further condemns the tone of some works issued by the medical press. Now, this judgment of a very cautious teacher so many years ago, is worthy of the most serious consideration in the present day. The freedom of entrance now accorded to women into the medical profession, lays a very heavy responsibility upon us, to prove that this new and increasing movement will be a future blessing to society.

We are happy in drawing into our schools a large number of capable women—women who may not only be a gain as physicians, but who may exert a most beneficial influence on the profession itself, if they bring into it fresh and independent life.

It is much to be regretted that our students are now compelled to go abroad for the completion of their medical education, for methods of study injurious to morality are exaggerated abroad. The abuse of the poor as subjects of experimental investigation, in whose treatment all decent reserves of modesty are so often stripped away; the contempt felt for the mass of women where chastity is not recognised as an obligatory male virtue; the

atrocious cruelty of their experiments on animals—all these results of active intellect, unguided by large morality, as seen in full force abroad, make me deplore the necessity which drives so many of our best but inexperienced students away, in search of more efficient training than they can obtain at home.

The two special dangers against which I would warn our students are :

First, the blind acceptance of what is called 'authority' in medicine.

Second, the narrow and superficial materialism which prevails so widely amongst scientific men.

In relation to the first point—viz., distrust of authority—although I fully recognise the respect which is always due to the position of the teacher, and the consideration to be shown to all who are called 'heads of the profession,'—I would very strongly urge you to remember that medicine is necessarily an uncertain science.

Life in its essence we cannot grasp. We understand it only through its effects, and all human judgment is fallible. Careful and wise observation bring us ever nearer to a knowledge of the conditions which are necessary for human well-being; but experience compels us to recognise the constant failure of theory or dogmatism in dealing with any of the infinitely varied phases of life. In medicine, we are forced to recognise the errors in diagnosis committed even by distinguished men, and to suffer grievous disappointment from the failure of remedies supposed to cure the sick. We cannot fail to note

the contradictory results of experiments, the same facts differing according to the observer—one fact upsetting another, and one theory driven out by a later one. This uncertainty resulting from experiment, is strikingly exemplified by the battle of experts about the effects of arsenic displayed in a late criminal trial. Or consider the frequent errors of statistics (a branch of knowledge that enters largely into medical science), owing to the imperfect data on which they are often based, important deductions being drawn from them which are logically indisputable, but entirely false, from the unsound premisses on which they rest. Thus, the death-rate of London, though commonly stated at 23 or 24 per 1,000, is really an unknown quantity, on account of the enormous influx of fresh life and the efflux of broken-down lives.

Our women students especially need caution as to the blind acceptance of authority. Young women come into such a new and stimulating intellectual atmosphere when entering upon medical study, that they breathe it with keen delight; they are inclined to accept with enthusiasm the best theory or statement which the active intellect of a clever teacher lays before them. They are accustomed to accept the government and instruction of men as final, and it hardly occurs to them to question it. It is not the custom to realize the positive fact, that methods and conclusions formed by one-half of the race only, must necessarily require revision as the other half of humanity rises into conscious responsibility.

It is a difficult lesson also, fully to recognise the limitations of the human intellect, which recognition, nevertheless, is necessary before we can grasp this important and positive fact in human experience—viz., that the Moral must guide the Intellectual, or there is no halting-place in the rapid incline to error. The brilliant professor will always exercise an undue influence over the inexperienced student, and particularly over the woman student. I therefore strongly urge the necessity of cherishing a mild scepticism respecting the dicta of so-called medical science, during the period of student life—scepticism not in relation to truth—that noble object which we hope to approach even more nearly—but scepticism in relation to the imperfect or erroneous statement of what is often presented as truth.

Of this one guiding fact, as a basis of judgment, we may be quite sure—viz., that whatever revolts our moral sense as earnest women, is not in accordance with steady progress; it cannot be permanently true, and no amount of clever or logical sophistry can make it true. It will be a real service that we, as medical women, may render to the profession if we search out—calmly, patiently, but resolutely—why what revolts our enlightened sense of right and wrong is not true. We shall thus bring to light the profound reason why the moral faculties are antecedent or superior to the intellectual faculties, and why the sense of right and wrong must govern medical research and practice, as well as all other lines of human effort.

As experience enlarges, we observe the immense separation in lines of conduct which gradually results from an initial divergence between right and wrong—a divergence almost imperceptible at first. We are thus compelled to come to the conclusion, in relation to our own profession, that the worship of the intellect, or so-called knowledge, as an end in itself, entirely regardless of the character of the means by which we seek to gain it, is the most dangerous error that science can make. This false principle, if adopted by the medical profession, will degrade it, and inevitably produce distrust and contempt in the popular mind.

The second danger against which the student of medicine must guard is the materialism which seems to arise from undue absorption in the physical aspect of nature, and which spreads like a blight in our profession.

The basis of materialism is the assertion that only sense is real.

Our medical studies necessarily begin with minute and prolonged study of what we term 'dead matter.' If this study be carried on without reverence, it appears to blind the student to any reality except the material under his scalpel or in his crucible—*i.e.*, the facts that the senses reveal. Proceeding logically from this false premiss, that only sense is real, mind is looked upon as an outcome of the brain, and life as the result of organization of matter, which is destroyed when the organization of the material body is broken up.

Some persons, successors of the materialistic ecclesiastics who condemned Galileo, cannot rise beyond the gross evidence of their senses. To such persons reason, which transcends sense, is a vague unreality, and the clear teaching of reason may to them seem doubtful, or superstition. But the stout fight which the old Italian nobly began, and which has been so bravely carried on for freedom of thought in our own day, is beginning to tell and reap a rich reward. Our senses, so far from being the boundary of real existence, are proved to be as untrustworthy guides now, as when Galileo's accusers insisted that the sun moved round the earth in twenty-four hours. The relations of our senses to our consciousness change with biological differences, as one creature can see what is quite invisible to another. The boundary-line which exists between our senses and our consciousness is constantly changing, and realities are shown to exist, of which our ordinary consciousness connected with the senses has no knowledge. Thus, life beyond, and independent of the senses, is being proved as positive and pregnant fact.

The great generalizations of modern science—the Conservation of Energy, the process of Evolution—are the products of Reason. They are metaphysical conceptions. Like the atomic theory or the law of gravitation, they are practical formulæ necessary to the advancement of science from the structure of our minds but they are the results of reason, not of sense.

Love, Hope, Reverence, are realities of a different

order from the senses, but they are positive and constant facts, always active, always working out mighty changes in human life.

A thoughtful writer has characterized Materialism as an attempt to explain the Universe in terms of mass and motion rather than in terms of Intelligence, Love, and Will, and it is a true criticism. Let me recall here the serious warning which Huxley gives to the shallow materialist who limits existence by the senses.

He says: 'The great danger which besets the speculative faculty is the temptation to deal with the accepted statement of facts in natural science as if they were not only correct but exhaustive—as if they might be dealt with exhaustively, in the same way as propositions of Euclid may be dealt with. In reality, every such statement, however true it may be, is true only relatively to the means of observation and the point of view of those who have enunciated it. Whether it will bear every speculative conclusion that may be logically deduced from it is quite another question.' 'In the complexity of organic nature there are multitudes of phenomena which are not deducible from any generalizations that we have yet reached; this is true of every other class of natural objects (as the moon's motions, gravitation, etc.). All that should be attempted is a working hypothesis, assuming only such causes as can be proved to be actually at work.'

These are valuable warnings from our great naturalist.

The tendency of unprejudiced science in our day is to show the unsatisfactory character of the terms 'matter' and 'spirit.' For the exaltation of what we term 'matter' tends constantly to lose itself in what we call 'spirit.'

Reality always transcends sense. As the vibrations of ether are only known as light and colour, and the vibrations of the atmosphere are translated into sound, so in the careful observation of our own mental states, in the experiences of dream-land, in the study of clairvoyants and somnambulists and the revelations of hypnotism, we gain an insight into states of consciousness independent of the senses—states where the old distinctions between matter and spirit seem to become quite inapplicable.

One third of human life is spent in sleep, a condition of which at present we know little, except that it entirely changes the life of conscious sense, and that it possesses a mysterious restorative power of the most precious significance to us as physicians. A study of all these mysterious conditions of human life itself, many of which, although occurring abnormally, have been presented again and again through all the ages, is surely the most important of all subjects for scientific medical investigation. Let us always bear in mind, as has been well said, 'the fact of illusion is not an illusory fact.' As an exception to a rule is the most suggestive fact for the investigator to grapple with, so those exceptional facts of human nature, which are nevertheless occurring in every age and in every nation, are the facts of all

others the most worthy of investigation by the scientific medical intellect. This new realm of research, when legitimately pursued, promises results of the very highest importance.

I must not now dwell longer on this new and valuable department of medical investigation—psycho-physiology. But it is an inspiring thought that true science supports the noblest intuitions of humanity, and its tendency is to furnish proof suited to our age of these intuitions. I have specially dwelt on this subject now, because the discouragement which results from the false reasoning of materialism, injuring hope, aspiration, and our sense of justice, is especially antagonistic to women, whose distinctive work is joyful creation.

In practical medicine the loss is immense when recognition of the higher facts of consciousness is obscured, and the physician is unable to perceive life more real than the narrow limits of sensation.

The physician is called to stand by the death-bed of the most carefully-tended patient. At that solemn moment the clear glance that sees beyond the boundary of sense, the reverential hand-clasp which conveys hope to the mourner, is the seal of his noble art of healing and the profoundest consolation he can offer to the bereaved. May the time come when every physician can convey this highest gift of healing with his ministrations!

I have now considered the fundamental reason why great advantage will result to society through the intellectual cultivation of the woman physician, unless

the study of medicine be pursued in such a way as to do violence to our nature by the destruction of sympathy, reverence, and hope.

I have also dwelt on the method of training especially needful to our students—viz., patient, persistent drill in the fundamental studies of medical education, a training which will form the habit of close and careful observation at the commencement of medical life.

I would now offer a few words of counsel in relation to the work which lies before us when we enter upon the practical career of the physician, for which our medical studies should carefully prepare us.

I believe that the department of medicine in which the great and beneficent influence of women may be especially exerted, is that of the family physician, and that not as specialists, but as the trusted guides and wise counsellors in all that concerns the physical welfare of the family, they will find their most congenial field of labour.

It is to fit ourselves for this most useful and influential position—viz., as the medical advisers of families—that, not limiting our education to any speciality, we have laboured, and must continue to labour, to remove all obstacles in the way of obtaining the fullest medical education. For this reason I have laid so much stress upon the cultivation of habits of careful observation, and I now would give a warning against sensationalism in medical study.

The unreflecting student (not unnaturally) rushes

after novelties. There is a certain excitement in witnessing a formidable surgical operation, or seeing a rare case of disease that may never again be presented to our observation. But these exceptional occurrences do not fit us for our future medical life as does the careful study of the commoner forms of disease, for those are the cases that most nearly concern us. But because they are common they cease to interest the unobservant student, who applies a routine treatment. But the physician whose faculties of observation have been thoroughly drilled has learned this lesson—viz., that no two cases of illness are exactly alike, and that it is of the utmost importance to our future success as practitioners to note these individual differences, their results, and why some die whilst others recover. It is far more important to our success as practical physicians to thoroughly master measles and whooping-cough, scarlet fever and porrigo, than to study an isolated case of hydrophobia or leprosy. Moreover, I hold it to be a special duty of our profession to extirpate these common diseases, not to accept them hopelessly as necessary evils. And it is only by a profounder and more comprehensive clinical study of the ordinary diseases of domestic life that we can hope to do this.

There are two great branches of medicine whose importance will, I hope, more and more engage the attention of women physicians. These are midwifery, which introduces us to the precious position of the family physician; and sanitary or preventive

medicine, which enables us to educate a healthy generation.

These two departments of the healing art will never cease from amongst us. I consider it a radical defect in our present system of medical education, that these subjects are not brought more prominently forward, and both of them raised into first-class professorial chairs.

Before closing, I must dwell for a few moments on the vital importance of midwifery to the future success of women physicians. This is the more necessary because I observe a singular and growing disposition on the part of our students, whether in America, France, or England, to despise or neglect midwifery. I do not know whether this proceeds from indolence, as midwifery is the most fatiguing and enchaining branch of the profession, or whether the neglect arises from failure to perceive the reason of our refusal to be simply midwives, for our insistence upon a complete education really means our determination to elevate, not repudiate, midwifery.

But the curious fact remains that many women doctors appear to look down upon this most important branch, and often state that they do not intend to undertake it. Yet it is through the confidence felt by the mother during our skilful attendance upon her, that we are called in to attend other ailments of the family, and thus secure the care of the family health. It is therefore of the utmost importance to our future position in medicine to establish our ability as thoroughly trustworthy obstetricians.

It is indispensable to the stability of our movement that very thorough provision be made for the obstetrical education of all our medical graduates. I do not think that any young woman physician is properly equipped for her future difficult career unless she has been to a great extent responsible for at least thirty midwifery patients, of whose cases she has made careful and discriminating records, and has had the opportunity of observing a great many more patients, in addition to the drill in all operative manoeuvres that can be given in college. We need a great maternity department, thoroughly organized, which, whilst arranged with kindest consideration for the poor, will put our students through a severe drill, such as is considered necessary at La Maternité in Paris. That institution, which receives annually an average of 2,500 patients, having over 10,000 applications in the year, is not only an invaluable practical school, but it has reduced the mortality amongst its patients to a minimum; and the searching method of instruction there pursued could be studied by us to great advantage as we try to secure a well-organized maternity charity for our students in London. Such a charity, if humanely planned, would be a blessing to poor mothers, and it would to a great extent remove the reproach of being obliged to send our enterprising young doctors abroad because London does not afford them sufficient necessary practical training.

But time warns me to close these remarks, although I would gladly have enlarged upon the

primary importance of preventive medicine—the medicine of the future—for it is quite certain that the greater part of disease, even including many surgical operations, is preventable disease. It is now, unfortunately, the case that unavoidable absorption in the treatment of disease makes the practical physician too often ignore the yet larger duty of preventing it.

I have tried to show (1) That women, from their constitutional adaptation to creation and guardianship, are thus fitted for a special and noble part in the advancement of the healing art. (2) That the cultivation of the intellectual faculties necessary to secure their moral influence requires a long and patient training by methods that do not injure morality. (3) That the noblest department of medicine to which we can devote our energies, will be through that guardianship of the rising generation which is the especial privilege of the family physician.

In conclusion, my young friends and fellow-workers, I would ask you all to join with me in the pledge which I gave more than forty years ago to the Chancellor of the Western University, who handed to me our first Diploma of Doctor of Medicine. I then promised 'that it should be the effort of my life to shed honour on that diploma.'

This is the pledge that we must all prepare for when entering the noble profession of medicine; in receiving honour we must add lustre to it, or we become unworthy of it.

It is a difficult life that we enter upon, in entering upon a medical career; but if our Christianity is worth anything, it must be 'a battle, not a dream.' We must be members of the church militant if we wish to enter the church triumphant. Life is a grand preparation for the exercise of ever larger powers, and I heartily welcome you to this winter's course of study, hoping that it may be a little step forward, but a sure one, towards that grand ideal which must be ever before us.

ERRONEOUS METHOD IN MEDICAL EDUCATION

*Addressed originally¹ to the Alumnae Association of the Woman's Medical
College of the New York Infirmary*

¹ In 1891

ERRONEOUS METHOD IN MEDICAL EDUCATION

ALTHOUGH it is many years since I have been able to assist in the management of the Infirmary and School which I helped to found in 1853, yet I watch its growth with steady sympathy, and rejoice in its success.

The last Report of the School, which has just reached me, contains a very important item—viz., the effort of the Alumnæ Association to 'Equip a Physiological Laboratory and place it under the superintendence of Professor W. Gilman Thompson,' a New York Vivisector. In relation to this effort, I desire to bring before you some grave considerations which are the result of my long experience in Medicine.

These considerations refer, *first*, to the kind of work that should be carried on in a Physiological Laboratory, and, *second*, to the special influence which women are called on to exercise in medicine.

A Physiological or Pathological Laboratory arranged for the legitimate investigation of the material composition of the tissues and secretions

of the human body, is an interesting and important department of medical study. The laboratory, however, is now commonly used as a place for experimenting upon living animals as if they were dead matter, or simple machines. This method of research is proving in several ways extremely injurious to the progress of the Healing Art.

The practice of Vivisection and unlimited experimentations upon our humbler fellow-creatures must be considered by us both under its intellectual and its moral aspects. From both these points of view very careful observation has led me to the conviction that this method of investigation is a grave error.

Let me here state distinctly that I willingly acknowledge the good intentions of all and the ability of some of the clever physiologists of the present day, although their method of experimentation is erroneous and the effects of that method injurious, being founded on a fallacy. What I now say, however, is directed chiefly to the instruction of medical students and to the practice of our young women doctors.

I ask you to consider, first, the intellectual fallacy which underlies this method of research. It is a twofold fallacy, resulting from the differences of organization in different classes of living creatures, and from the fact that when any organ is injured, it is a process of destruction or death—not life—that is exhibited.

There is an ineradicable difference of physical

structure between Man and every species of lower animal. Nowhere is there identity of structure or of function. Resemblance or parallelism often exists, but identity never. Take the dog, for instance, whose attachment to Man furnishes us with the widest opportunities of observation. In no single function of its body is the action of the function the same as in Man. All the processes of digestion, including its large group of connected organs, differ from those of the human being. Observe carefully the processes of healthy living animals. You will find that their senses act in a different way to ours—a way which is often quite unknown to us, we possessing no power even comparable with many of their powers. Their relations to nature differ in many ways from our relations. It is true that they eat and sleep and dream; that they possess intellectual and moral powers, and are susceptible of education. They exhibit a rough rudimentary sketch of our higher spiritual powers, and are related to us in many ways. But the differences are so great, their whole attitude towards external life is so different, that they may be truly said to live in a different world from ours. So that in no possible instance can we draw a positive conclusion respecting the lower animal nature, that can be transferred as reliable information to guide us in relation to the action of the human organs and functions, either in health or disease. This misleading difference is true not only in relation to the spontaneous working of functions, but it is also true in respect to the actions

of poisons, of drugs, and the artificial production of diseases. Animals can be rendered scrofulous, diabetic, syphilitic, leprous, by forcing the poison of diseases into their bodies. Morbid action, atrophy, slow death, can be produced by removing portions of their organs; but no deductions drawn from these artificial conditions can be transferred to man in order to cure human disease or restore lost function. The scrofula, diabetes, syphilis, or rabies, takes on a different form when the lower animal has been artificially poisoned by these diseases. In not a single instance known to science has the cure of any human disease resulted necessarily from this fallacious method of research.

In 1849-50 I was a student in Paris, and, with the narrow range of thought which marks youth, I was extremely interested in the investigations respecting the liver and gall bladder which Claude Bernard (Majendie's successor) was then carrying on and lecturing upon at the Collège de France and the Sorbonne. I called upon M. Bernard to ask him where I could find some work on 'Physiologie Appliquée' which would show me how the results of these investigations could be applied to the benefit of man. M. Bernard received me with the utmost courtesy, but told me there was no such book written; the time had not come for the deductions I sought; experimenters were simply accumulating facts. We are still, forty years later, vainly accumulating facts! This present summer Dr. Semmola, 'one of the most brilliant pupils of Claude Bernard,'

lectured in Paris on Bright's disease, which he has been studying for forty years with unlimited experimentation on the lower animals, for the purpose of producing in them artificial inflammation and disease of the kidneys. What is the result to the human being of all this prolonged and ingenious suffering inflicted on helpless creatures? 'Dr. Semmola insisted upon temperance in eating as well as drinking, and said that the best way to preserve health was to eat only what was needed for the nourishment of the body.' No cure for the human malady had resulted from this persistent experimentation.

Is it not intellectual imbecility to waste thought and ingenuity in putting animals to lingering and painful deaths in order to reassert the well-proved fact that intemperance in eating and drinking will produce forms of digestive and excretory disease varying with the idiosyncrasy of the individual?

In late discussions in the French Academy of Medicine relative to chloroform, where Laborde and Franck exhibited experiments on animals, Dr. Le Fort (the distinguished surgeon) says: 'None of these experiments give us any instruction whatever which is useful in practical surgery. Whatever their scientific interest may be, their deductions are in no way applicable to man. Experimenters relate causes of death, but nothing of the sort is generally found in the deaths of practical surgery. The man faints when operations are begun too soon, or is frightened by preparations. He dies because, being a man, his

nervous system reacts in a different way from that of the dog or the rabbit. Do not count in any way upon the teachings of physiologists in practical matters. Don't let your patient see any preparations, give the chloroform slowly, wait till he is profoundly asleep. That is all you can do.'

Again, at another discussion at the Academy, M. Verneuil says: 'It is incorrect to say that laboratory experiments give certainty to medicine, and make it scientific instead of empirical. The fact is that experimentation has put forth as many errors as truths. There is not sufficient identity, either physiologic or pathologic, between man and the mammifères such as the dog and the rabbit.' The different ways of dying under chloroform have been long ago stated by surgeons. The experiments shown by M. Laborde on the rabbit must be absolutely rejected, as contrary to experience (in man). Maurice Perrin showed to Vulpian in 1882 that the nervous reactions in man differ from those in animals, and the effects produced by chloroformization could not be relied on as being the same as on man. Vulpian entirely accepted this. The experiments of physiologists have taught us absolutely nothing in the way of preventing chloroform accidents; surgeons have been beforehand (as was natural) in practising artificial respiration and every other method of recovery. However interesting these experiments on animals may be considered, they do not explain satisfactorily the cause of chloroform accidents in man, and in no way show the way of avoiding them.

I could multiply these facts by indefinite quotations from experienced physicians, of the intellectual uselessness of a method of research which ignores the spiritual essence of Life and hopes to surprise its secrets by ruthless prying into the physical structure of the lower animals. We are learning that vivisection is examination of the beginning of death, not of life. Loss of blood is a loss of nutriment; the result is muscular debility and enfeeblement of the vital organs, and the introduction of a disturbance in the vital processes which ends in their destruction. This method of research is now being discredited by many of the most enlightened members of our Profession.

But what I wish especially to call your attention to, is the educational uselessness of vivisection in training students, and the moral danger of hardening their nature and injuring their future usefulness as good physicians.

It is not true that vivisection is necessary to the medical student in order that she may attain the thorough knowledge of human physiology which is needed for the intelligent exercise of the medical profession. Class demonstrations in opening the bodies of the lower animals to examine their organs and tissues are misleading in respect to the action of human organs. The action of the human salivary glands, the action of the cavities of the human heart, the secretion of the gastric juice, etc., can be more correctly realized by careful anatomical study in connection with clinical observation of the effects of

healthy and diseased action in the human being, than by any amount of bloody experiment and mutilation of still living cats and dogs. Such demonstration may gratify that instinct of curiosity which always exists in youthful human nature, or it may pander to that craving for excitement which makes the spectacle of a surgical operation so much more attractive to the undeveloped mind than careful clinical study—a tendency which is also seen in gambling, watching executions, bull-fights, etc.—but these are tendencies to be repressed in serious and responsible study, not encouraged. The precious mental activities of the student need to be specially trained into observation of our *human* faculties in health and in disease. The establishment of a Physiological Laboratory for experimenting on living animals, in a medical school, is not only giving a wrong direction to intellectual activity, but is wasting the valuable time of the student, and diverting the attention of the young practitioner from that careful and intelligent study of the human organism, which alone can lead to practical beneficial results. This practice must therefore be condemned, as giving a false direction to the intellectual faculties of the young.

Of the moral danger involved in such methods of study there can be but one opinion by thoughtful and observant persons within the ranks of our Profession.

The exercise of our superior cunning in destroying an animal's natural means of self-defence, that we

may (with convenience to ourselves) watch changes that occur in its organs during the slow process of a lingering death, is an exercise of curiosity which inevitably tends to blunt the moral sense and injure that intelligent sympathy with suffering, which is a fundamental quality in the good physician. The practice of recklessly sacrificing animal life for the gratification, either of curiosity, excitement, or cruelty, tends inevitably to create a habit of mind which affects injuriously all our relations with inferior or helpless classes of creatures. It tends to make us less scrupulous in our treatment of the sick and helpless poor. It increases that disposition to regard the poor as 'clinical material,' which has become, alas! not without reason, a widespread reproach to many of the young members of our most honourable and merciful profession. The hardening effect of vivisection is distinctly recognised in the Profession, although often excused under the abused term—'scientific.' Dr. Loye, who, with another physician, studied the process of guillotining a malefactor at Troyes, thus writes: 'Both of us believed that our wide experience of bloody vivisection would have hardened us sufficiently to go through the spectacle without very great emotion.'

It is our duty and privilege, as women entering into the medical profession, to strengthen its humane aspirations—to discourage its dangerous tendencies. We must not be misled by clever or brilliant materialists who take the narrow view that physical life can be profitably studied without reverencing the spiritual

force on which it depends. A physiological and pathological laboratory, legitimately conducted for the investigation of healthy and diseased human secretions, in connection with clinical observation, may be made a valuable aid to medical advancement, and I would always encourage the organization of such a laboratory. But to use it for cutting up animals dying under anæsthetics is stupidity, and to convert it into a torture chamber of the lower animals, is an intellectual error and a moral crime.

The possible results of slow deterioration in the moral nature when we violate in any degree our religious standard of justice and mercy may be most strongly realized in living examples of diseased inherited tendencies. Such a fearful example is before us in the life history of the criminal, Jesse Pomeroy, now in the State Prison of Charlestown, Mass., who has spent his life in penal servitude, expiating his atrocious mutilations and murders of little children, committed when he was a lad of fifteen. The deteriorating moral influence exercised on offspring by vicious parental tendencies, is directly exhibited in this living object lesson. The father of this lad was a butcher. His mother, during the gestation of this child, took a persistent and morbid delight in watching the death of the animals slaughtered by her husband. We see in the atrocities committed by her young son, a terrible example of the evil effect which the mind can exercise, in deteriorating individual character and in extending its evil influence to others. All experience proves

the powerful influence exercised by the parental, and especially the maternal, qualities upon the offspring. Every woman is potentially a mother. The excuse or toleration of cruelty by a woman upon any living creature is a deadly sin against the grandest force in creation—maternal love.

I earnestly ask all women physicians to consider the special responsibility which rests upon them, to take that large religious view of life which alone can check any degrading tendencies in intellectual human activity and elevate our noble Profession. Let us not be misled by sophistical arguments, but look steadily at the actual facts of animal torture, and work persistently for the total abolition of vivisection from our medical schools. In this way we shall justify our entrance into medicine, and prove ourselves strong supporters of that noble humanity which is the especial characteristic and solid foundation of the Medical Profession.



WHY HYGIENIC CONGRESSES FAIL

*LESSONS TAUGHT BY THE INTERNATIONAL
CONGRESS OF 1891*

INTRODUCTION

THE noblest aim of humanity is the application of Truth to the conduct of life. By doing we develop our faculty of knowing.

The difficulty, however, of knowing how to apply Truth in daily life is so great, and yet the need is so urgent, that the most pressing duty of those who have faith in the Divine is to bring forward to the light of sympathetic conference, the facts of life in which one's most intimate experience lies.

Thus the merchant and manufacturer, the business man and the legislator, the farmer, householder, literary man, and those who, living upon interest, should know how that interest is gained, must ever hold it to be true religious duty to seek, in conference with others, the way of elevating every department of life.

Religious or Unitary truth possesses invaluable guidance for Medicine, not only in its practical application as an art, but in the methods by which it can alone become a science.

Truth recognises this great fundamental fact—viz., that spirit moulds form, that the senses alone are not reliable guides in solving the problems of even physical life.

Research and observation also show that essential elements of Truth have always existed in Humanity; that we cripple our power of advancing in Truth if we do not seek out these indications of the Divine in all past experience and carefully consider the light they throw on present life.

We recognise in these weighty facts a great Providential method of human growth and an infinitely beneficent aid towards the attainment of that moral Ideal wherein Goodness and Truth, Justice and Mercy, Love and Wisdom, become one—inseparably united.

One of the great truths given in past ages, which it is necessary to study and enforce in the present age, is the intimate connection which exists both mentally and physically between human beings and lower forms of animal life.

This is a truth of great moral significance. It was dimly, perhaps grotesquely, seen in some religions of the past, but is so much lost sight of in the present day that our responsibility for the care of the inferior creation we were intended to train with justice and gentleness, becomes too often a cruel and odious tyranny. Even in some branches of knowledge (knowledge which can only justly claim the name of science when it is the most comprehensive study of truth) injustice and cruelty are mislead-

ing ¹ intellect, and thus threatening danger to the progress of the human race.

Being profoundly impressed by the fundamental character of these truths as necessary guides in medicine as well as in every department of human life, when I learned that extensive preparations were being made in the greatest city of the world for consideration of perhaps the most important subject that can engage our attention — viz., Health — I arranged to be present as a delegate, and steadily attended the Congress, comparing notes with other friends who were attending its various sections.

In this way we gathered an accurate knowledge of the tone of the discussions, the methods pursued, and the tendencies of modern investigation.

These facts seemed to me of sufficiently serious import to make them worth recording in the following pages.

WHY HYGIENIC CONGRESSES FAIL

THE Seventh International Congress of Hygiene was held in London from August 10 to 15 of 1891. It is noteworthy for the number and representative character of its members, and also for the wide range of subjects affecting the physical welfare of the race, which were considered. Representatives from America and from Asia, as well as from the various nations of Europe, assembled in the Great Metropolis to consider the vital subject of Health. These learned men met together daily during the week in nine different sections, from ten to two o'clock. They were occupied with the subjects of Architecture, Engineering, Chemistry, the health of soldiers and sailors, the care of early childhood, the duty of the State in relation to the Health of the Nation, Health Statistics, Bacteriology, and the relations of Animal and Human Disease.

In the consideration of this wide range of subjects, valuable experience and much useful information were presented in the papers read and in the discussions that followed. But in a Congress not held together by any great guiding principle, where

persons of various nationalities, moulded by different laws, methods of education, and social customs were represented, a great variety of opinion, of contradictory facts, of imperfect statistics and superficial theories, would necessarily be brought forward. Nevertheless, a remarkable concensus of opinion established one great result of experience—a result which may be considered the striking practical lesson of the Congress—viz., that it is to sanitation that we must look, not only for the prevention of disease, but largely also for its cure.

Supremacy of Hygiene.—Taking the results of sectional discussions as a whole, it was very generally shown that, by our increasing knowledge of hygienic law, its wide diffusion amongst the people, and its intelligent application to daily life, we can counteract the evil influence of heredity, get rid of epidemics, improve the stamina of the race, advance in longevity and in the natural enjoyment of our earthly span of life. Thus it is by the advance of sanitation that the Art of Healing can alone become a science of Medicine.

A few illustrations will show how this growing result of modern thought was both directly and indirectly supported by the papers and discussions of the various sections.

Thus Sir Charles Cameron, of Dublin, showed the beneficial change wrought by ten years' sanitary effort in the Dublin slums through rebuilding, draining, cleaning, and free disinfecting. Those wretched quarters were a breeding-ground of human misery

in 1871, where small-pox, typhoid fever, and all contagious diseases seemed to be endemic. The annual mortality was reduced in ten years by sanitary measures from 34·11 to 28·80 in the most crowded portions of this wretched quarter; in its less crowded part the mortality had fallen to a much lower figure, notwithstanding the intemperance and destitution which still continued to afflict the inhabitants. In this example it should be especially noted that the goodwill of the people was enlisted, for the municipality laid aside the idea of pecuniary gain on the sum expended in rebuilding, etc., and offered a better lodging at a rent that could be paid, and provided all sanitary appliances free, thus losing, in the sense of money profit, to gain in the far higher value—health.

Another remarkable illustration from very large experience was that given by Professor Smith, of Aldershot, who is at the head of the cavalry department of our army. He showed, by most interesting tables, that diseases formerly rife amongst horses—glanders, farcy, canker of the foot, etc.—were now practically unknown in the army. This triumphant result was entirely due to careful hygiene, the utmost attention being paid to food, ventilation, drainage of stables, the care of the feet and shoeing, of saddles and harness, and reduction of the burden which the horses were required to carry, to fifteen stone as a fair average. As was justly remarked, there is a limit to the weight that a horse can carry or draw, beyond which is cruelty and injury.

Drs. Schrevens and Gibert, from France; Dr. Abbott, of Mass.; Dr. Pagett, of Salford; in discussing diphtheria and typhoid diseases from defective drainage, laid stress upon purity of air and cleanliness of the soil as the chief points for consideration. The same indispensable principle of sanitation was shown in respect to meat and milk used for food. In France 5 per 1,000 of animals used as food are tuberculous, such disease resulting from wrong methods of breeding, feeding, and managing these useful animals.

Professor Ralli showed how parasites could be conveyed from animals to men, and dwelt on clean bedding, coverings, suitable food, water, free exercise, as the necessary prophylaxis.

Dr. Hime, of Bradford, and Chauveau, of France, dwelt upon terrible diseases, such as the woolsorters' disease, to which men are exposed who handle the skin, horns, etc., of animals—diseases which are entirely preventable if the manufacturers engaged in such trades would place the health of men above the profit to be gained by trade; thorough ventilation, disinfection, and other sanitary measures would entirely prevent the present reckless destruction of health. The same was true in the large industry of sorting rags imported from abroad, of match-making, etc.

It is a noteworthy fact that in the section of the Congress devoted to the relation of diseases of men and animals, which I especially attended, sanitary prophylaxis alone was dwelt upon as the condition

of supreme importance. Inoculation was not advocated by any speaker, except the official representative of the French Pasteur Institute.¹

Compliments were duly paid to M. Pasteur, whose skill and zeal in a false method of research may justly command intellectual recognition. But no one in any case advocated the theory of diffusing mild forms of disease for the purpose of preventing the severe type in the important and practical discussions which took place daily in relation to diseases common to man and the lower animals.

Thus a great principle of progress in the prevention of disease and in the attainment of a higher standard of health was directly or indirectly acknowledged by this varied body of men of trained intelligence and large experience—viz., the paramount importance of sanitary knowledge and practice.

Obedience to the conditions of healthy growth is the law of progress, from which there is no escape. It is the only way by which disease can be gradually eradicated. Every attempt at evasion inevitably brings its own retribution in various ways, swiftly or slowly, but surely.

All medical by-paths leading in a different direction from the condition of healthy life, however tempting they may appear to active intellectual curiosity, or however desirable it may seem to find a short cut to health, necessarily lead to error if the supreme importance of sanitation be ignored.

See Appendix, p. 85.

Now, notwithstanding the large amount of valuable experience brought together in this International Congress, there was one serious omission in the otherwise wide and interesting plan of the Congress - an omission which had a direct practical bearing on the discussions carried on in the various sections. This vitiating lack was the failure to recognize the fundamental connection of mind and body in the phenomena of Life. There was no appointment of any special section which could give prominence to this subject, and thus strike the keynote capable of bringing all the sections into harmony.

This omission is the more noteworthy because a section was devoted to the theories of bacteriology, which, as will be seen, are directly opposed to the true science of Health.

Practical success in sanitation is impossible without the recognition of mind, both in the actual working of the organs of the living body and in the knowledge and acceptance by mankind of the conditions which are essential to health.

If human constitution be governed by laws independent of the influence to which healthy growth is always subject, then those laws must be carefully sought out before we can build up a science of Hygiene. To regard living beings as simply material bodies, without the constant and varying influences of mental action upon the working of those bodies, is an intellectual error which disregards the essential condition of mental harmony in relation to health.

It must also be recognised that whatever may be the discoveries of physiological science, they will remain barren unless applied by individuals. In all the concerns of life, whether in the application of principles or in the unconscious formation of habits, we are compelled to deal with the ceaseless power or effect of Will. To treat even the most ignorant adults by arbitrary, unreasoning compulsion is a scientific blunder.¹

The Two Problems of Hygiene.—The two fundamental questions for hygiene to solve are therefore: 1st. What are the conditions of healthy growth? 2nd. How can those conditions be secured?

In answering these two fundamental questions the problem of mental action enters into every hygienic section of a Congress, and is the keynote which must be struck if harmony of theory and practice is to be attained.

But in consequence of too narrow a view of hygiene these questions were not solved, and this remarkable assembly of learned men, brought together with such careful preparation and hospitable welcome, produced no practical results of the com-

¹ Dr. Hambleton calculates the pecuniary loss from waste of life in the army from preventable disease, chiefly of the lungs, as at least half a million a year—a waste of life which adds materially to the number of recruits required. Whilst stating the hygienic measures in relation to clothing, special exercises, air, and bathing, which have been shown to restore the inferior physique of recruits, he places as the crowning necessity 'explaining to the men the effects of good and bad habits upon their health, so as to insure their co-operation.'

manding value that the public had a right to expect from it.

Sanitary legislation was shown to be largely evaded, but the reasons for this unsatisfactory evasion were not examined; the results of experimental research were proved to be strangely contradictory, but the conditions which would harmonize them were not discovered; unproved theories abounded, but the fallacies that vitiated them were not made clear.

Disappointment as to the practical utility of the Congress was widely felt both at home and abroad.

This disappointment with the results of the Congress has been publicly expressed by our foreign guests. A clever abstract of the work done at this Seventh International Hygienic Congress has been published in Paris by the well-known editors of *The Review of Hygienic and Sanitary Police*. Some noteworthy statements are made in the introduction to this volume which should be seriously considered by all who reverence righteous sanitary science as the foundation of human welfare, but who also know that sanitary science must approve itself to the good sense of a people, or it will be of little practical utility.

Failure of English as well as Foreign Sanitation.—This high French authority declares that notwithstanding the efforts for sanitary improvement in which England has set an example for fifty years, the relative mortality of England has not diminished. It is stated: 'The subject of the mortality of England,

although not touched upon in the Congress, was the subject of most private conversation. The real figures of English mortality show a singular coincidence with the mortality of other European countries. It is shown that in none of these countries has the mortality diminished during the last fourteen or fifteen years, except when the birth-rate has diminished, and only in an exact proportion to this birth-rate.' England has no better record to show in this respect than her Continental neighbours, notwithstanding the increasing demands of her specialists for extended legislative powers. Our French critics remark that 'English hygienists of to-day are demanding great administrative centralization; their sanitary laws are rigorous to a degree that other countries would consider excessive; local self-government as well as individual liberty is less and less respected, and, from the statements of specialists interested in the subject, there is reason to believe that at no distant date every branch of public hygiene will be entirely administered by the Central Government.'

'It is to be hoped' (they remark) 'that English good sense will learn how to avoid the abuse of centralization, for it is just as illogical to wait for the intervention of the Central Government in the sanitation of a parish or the prevention of a local epidemic as to refuse such intervention when public danger arises from negligence or stupidity.'

These observations of hygienists, coming from France, a country which we are accustomed to consider (and which in some respects really is) much

more over-ridden by officialism than England, are extremely valuable. They serve to warn us of the grave danger of depending upon centralized legislation or arbitrary authority withdrawn from popular influence, and from that growth of individual enlightenment which arises through the sense of responsibility.

Our friendly foreign critics justly ask: How is it that England, first in the field of sanitary science, with a rigorous system of compulsory legislation, with administration, laws, regulations, agents, and also a gradual development of private hygiene, has still to deplore the unhealthiness of such a large number of towns, quarters, and habitations, and sees no diminution in her annual rate of mortality?

They advance towards the root of the matter when they observe in this same report that laws are one thing, their application quite another thing! 'So true it is that public hygiene depends upon general education as well as on the education of specialists, that no laws or regulations will suffice when the habits of the people generally do not promote their application.'

In other words, mind as well as matter must be considered in the subject of sanitation.

The student of science who has learned the great principle of creative Unity knows that no manifestation of existence can be absolutely separated from the rest of creation. As we investigate phenomena it is seen that the laws governing separate phenomena

become more comprehensive as knowledge increases, because more widely embracing separate facts; varieties are seen to be linked together by relationships, and apparently different phenomena can be transmuted into one greater force.

In the plan of an International Congress, designed to gather together the advanced knowledge of many nations on the whole science of health, the omission of any section which should bring into prominence this powerful fact in life—the influence of mind on body—is a very grave defect. It is an error which affects both the investigation of facts and the application of results, the two indispensable factors to the progress of sanitation. Their neglect in an International Congress on Health was the more unfortunate because mental influence is a fact which is forcing itself upon the attention of investigators with increasing urgency.

Increasing Importance of the Mental Problem.—Under the modern title of hypnotism facts of the most remarkable character are now acknowledged and studied. The cure of disease by suggestion, carefully and humanely applied, has been proved beyond the possibility of rational denial. The reality and practical effects of mental epidemics is a positive fact. The effect of fear in predisposing to cholera, hydrophobia, and other diseases cannot be denied.¹

¹ Sir Walter Scott, a connoisseur in dogs, writing about popular belief in 1832, remarks: 'The powers of this talisman have of late been chiefly restricted to the cure of persons bitten by mad dogs, and as the disease in such cases frequently

The contagion of religious enthusiasm or religious fanaticism are facts; whether the effects are seen in the devotion of the Salvation Army, or in pilgrimages to Lourdes or Trèves with their so-called miracles of faith-healing, they are equally facts requiring consideration. Wild business speculations in the craze for riches become contagious, and lure multitudes to ruin.

The history of past and present medical delusions is also most instructive. We need not go to the Sangrados of a past generation, who treated every disease by blood-letting, or the search for the elixir of life in illustration; the contagion of false hopes in relation to consumption, which upset the judgment of two hemispheres, cannot yet be forgotten. Thoughtful physicians possess abundant warning against being carried away by new theories which violate the moral sense or the Law of Unity, even when such theories are supported by distinguished names.

Experience proves the potent character of mental stimuli in moulding practical action. Fear or hope, curiosity, vanity, cupidity, when regardless of the Law of Unity, seize upon isolated phenomena removed from their natural connection, and distort them by creating morbid conditions, thus viewing facts out of proportion. Statistics thus formed

arises from imagination, there can be no reason to doubt that water which has been poured on the Lee penny furnishes a congenial cure.'

become fallacious, and serve as the bases of dangerous theories—theories which, unless checked by popular common-sense from being put into practice, would cause the moral and physical degradation of the race. I need only refer to the folly of injustice embodied in certain medical acts lately abolished and to the present theory of inoculation, as noteworthy instances of dangerous mental delusion desiring to shape itself into action.

Materialism, which is blind to other than sensuous life, which insists upon reducing every phenomenon to the limits of the senses, which refuses to be enlightened by any higher reality, or sneers at the term 'vitality,' neglects a great range of positive facts, and has no right to the noble name of science. Reflection, therefore, shows that the moulding and guiding power of mental action in shaping physical results being a fact of the most far-reaching character and of permanent operation in sentient creation, its omission in a Congress of Health was a serious injury to the results of the Congress. It was a sufficient reason for that sterility of result which has been publicly and privately expressed.

The error of not recognising mental as well as physical forces, or the Law of Unity, in relation to health, and the tyranny that may result from such imperfect method in the study and application of sanitation and medicine, may be illustrated by an interesting incident of the Congress.

An important joint meeting of two sections took place in order to listen to the discourse of one of our

ablest investigators—a man in high position, and one who wields a powerful influence on the rising generation of medical students. This gentleman early in his discourse made the following noteworthy announcement: 'I claim the right of science to dictate'—and as if to strengthen this claim by the authority of our French brethren he added 'conformément à la logique'—'I claim the right of science to dictate in accordance with logic.'

The bold demand for absolute obedience thus authoritatively made by a professor at the head of biological research demands careful consideration. It is the announcement of a new priesthood or esoteric sect of physical science. In the mind of the speaker it means that his science is identical with truth. If that be admitted, it is the highest wisdom of the human being to obey gladly and unhesitatingly, and the teacher thus inspired with truth rightfully commands our grateful and profound reverence. But this claim may also mean the unconscious arrogance of a mind taking too narrow a view of science—a mind which, whilst earnest and laborious in investigating partial phenomena, is intoxicated by the discovery of new facts with the theories which can be built upon them, and at once announces himself as one of the priests of a new religion demanding absolute obedience; for the temptation of all priesthoods is to form an esoteric sect.

In this second case it is the bounden duty of every truthful mind to refuse obedience. For until

the claim is fully examined in all its aspects, in both its physical and mental relations, and sustained by the deliberate and hearty assent of all intelligent minds and the instinctive accord of the people generally, this demand for absolute obedience to the theories of so-called science must be resolutely withstood as a reintroduction of mischievous and degrading superstition.

The special occasion which led to this unfortunate claim for dictation, or the compulsory regulation of disease by specialists, was the subject of tuberculosis and the exaggerated claim of the modern bacteriologist that the tubercle bacillus is the sole primary cause of consumption, with the logical claim that, as only the thoroughly-trained specialist can detect this bacillus, consumption should be scheduled as a contagious disease, and subjected to the rigorous regulations of the specialist and his board of advisers.

As our largest item in annual mortality is death from tuberculosis—about 14 per cent. with us—and as food and air *may* introduce a bacillus into the system, we can dimly imagine the extent to which the claim for dictation may grow in 'accordance with logic.'

Many striking instances of crude official tyranny were revealed by our Canadian and other foreign delegates. Thus, railway passengers from Montreal to Ontario were compulsorily revaccinated on the train before being allowed to enter Ontario.¹ The

¹ An English gentleman, Captain Frank Fairbanks, was detained for a fortnight in quarantine (says a Boston telegram)

foolish and fallacious system of attempting to *regulate* special vice was seen to prevail largely in the inexperienced civilizations of Canada and Western United States.

Scientific Inquirers.—I will here quote a late statement of Professor Huxley's, which might well be emblazoned in all our medical schools. He says: 'We are at the beginning of our knowledge instead of at the end of it; the limitation of our faculties is such that we never can set bounds to the possibilities of nature. The verdict may be always more or less wrong, the best information being never complete, and the best reasoning liable to fallacy.'

'The greatest mistake those who are interested in free thought can make is to overlook these limitations and deck themselves with the dogmatic feathers which are the traditional adornments of opponents.'

This vigorous protest of our English naturalist against the dictation of so-called science is in striking accord with the observations of our French visitors in relation to the futility of compulsory legislation now urged by scientific specialists.

What is Science?—When the investigators in any limited branch of knowledge glibly use the term 'science' to compel assent or to enforce legislation, we are forced to ask, What is true science or certain knowledge grounded on demonstration, as distinguished from false science, which is uncertain

because he refused to be vaccinated. A younger brother of his had lost his life through vaccination.

knowledge, based upon varying and imperfectly observed phenomena or upon theory? Knowledge is of various kinds: Mental, Physical, Mathematical. These separate departments of knowledge rest equally on bases of fact. Love is as much a fact as bread-and-butter; justice is as potent in its effects as microbes; and from their wider range of action and more permanent duration these mental facts are far more *real* than the physical phenomena.

In determining the claim of science to obedience the great Law of Unity gives the guiding principle, which, however humbling to human arrogance, or however affirmative of the limitations of our intellect, the truly scientific mind is bound to accept.

The Law of Unity the Foundation of Science.—The Law of Unity teaches us that no explanation of any fact is final or 'true' if it contradicts other facts. It announces that no method of examining facts is reliable that destroys other facts equally patent, and that any results deducible from partial phenomena, however interesting or even apparently useful, can only be regarded from the point of view of true science as temporary expedients. They may possibly be recommendations for useful trial, but they can never be justified as subjects for dictation.

The confusion of thought which has brought the unnatural practices of inoculation into fashion may be usefully illustrated by dwelling on the mingling of truth and error which exists in relation to vaccination. Vaccination must not be confounded with

inoculation, although the word 'vaccination' is now incorrectly used by bacteriologists to cover up the alarming practice of injecting the diluted virus of any particular disease, which is inoculation. Vaccination, on the other hand, is solely the injection of matter derived from a disease in the vacca, which disease is neither small-pox nor derived from small-pox, and vaccinia in a healthy cow is a mild disease.

During a lifetime of medical practice I have vaccinated children (sharing the widespread belief that it was preventive of small-pox). The practice, however, has always seemed to be an unsatisfactory method, which I hoped increased knowledge of sanitation would enable us to improve.

I also recognised the powerful influence of fear in predisposing to disease, and I regarded vaccination as a sedative for the family or community. My faith in the innocence of this practice was, however, rudely shaken by the lamentable death, in my own practice, of a scrofulous infant—a death clearly caused by the phagedenic ulceration produced by the vaccination. I also noted the accumulating evidence of very serious diseases communicated by so-called vaccine lymph.

Vaccination not Scientific.—But Professor Crookshank, in his exhaustive work lately published on vaccination, has conclusively proved the unscientific character of the evidence on which this practice is based, our ignorance of the sources of the virus commonly used and its mode of action, and also the

uncertainty of its prophylactic power.¹ That the generally mild disorder of vaccination, although arbitrarily and even tyrannically enforced on every child born in our country, does not prove the prevention of small-pox which it is claimed to be, is shown by the recurrence of epidemics of small-pox amongst us, by the occurrence of the disease in vaccinated persons, and also by the demand now made by the French Academy of Medicine (which recognises the failure of our system of vaccination) for legislative powers to compel repeated revaccination. This demand for power of indefinite revaccination is a logical demand. For, proceeding on the assumed premiss that vaccination prevents small-pox, but being met by the inexorable fact that epidemics of small-pox *do* occur and spread amongst vaccinated people, the cause of this contradiction is assumed to be that the supposed preventive power of vaccination has been thrown out of the system, and must therefore be again renewed. Logically, therefore, not only the infant must be subjected, but the child, the adolescent, and the adult. All must be compulsorily revaccinated, as the human system undergoes a change at each of those periods of growth.

The history of the struggle against compulsion in vaccination is very interesting, as a strong condemnation of that arrogance of false science which presumes to trample on human rights whilst

¹ See Crookshank's *History and Pathology of Vaccination*.

neglecting hygienic conditions. As all intelligent persons should be able to form a practical judgment on the important question at issue, I should like to dwell a moment on the subject of immunity, a fact (though now misapplied) on which compulsory vaccination is based.

Immunity.—Observation has long shown us that when the human system is gradually exposed to injurious influences, a certain tolerance of those influences may be acquired, which often enables those exposed to them to escape a late death, although with impaired health, whilst healthy persons suddenly exposed to the same injurious influences die. This is a well-known fact, capable of abundant verification. Thus, persons long resident in a badly-drained house, although frequently ailing in various ways, may never be laid up with typhoid fever; a certain immunity has been obtained by the slow adaptation of the system to bad air, but at the sacrifice of vigorous health. But if a new and healthy family move into the same house a deadly outbreak of typhoid or diphtheria may at once result.

In the malarious districts of the United States a large scattered population of what are called by the negroes 'mean whites' continue to live, with clay-coloured faces, enlarged spleens, and impaired vitality, yet for a stranger to sleep in those regions is deadly. The strong tendency to live, which we call vitality, though it has enabled those born and brought up under injurious influences to struggle on through life, does not prove equal to resistance in many constitu-

tions suddenly exposed to the injurious influences. The medical statistics of our army in India show that the newly-arrived is far more apt to suffer from enteric fever than one who has been long in the country.

‘The percentage of deaths from this cause is nearly fivefold greater in the first or second year of service than from the sixth to the tenth year. Medical officers are unable to trace out in any given instance a definite insanitary condition to which with certainty the outbreak can be attributed.’

There is, therefore, fact for theory to be built on—viz., the possible adaptation of the human constitution to injurious influences, an adaptation which, whilst impairing general vigour, often produces immunity from rapid death.

This fact, confirmed in the mind of the bacteriologist by the fallacious system of diseasing animals as ‘*témoins*’ or ‘controls,’ has given rise to the dangerous theory that all contagious diseases may be forestalled in their most deadly form by the inoculation of human beings with diluted virus produced by those diseases. This dangerous belief has been widely fostered by the unfortunate educational influence of the law of compulsory vaccination. But it must be observed that vaccination, unlike inoculation, does not introduce any products of the special disease—small-pox—into the system. The vaccine disease in the cow is not small-pox, nor can it ever be made to produce small-pox. The preservative power which is claimed for it, therefore, has not the dangers which are attached to inoculation, but

neither can it claim the occasional immunity which may attend that dangerous practice of introducing small-pox virus into the blood. Pure air, cleanliness, and decent house-room secured to all our people, form the true prophylaxis of small-pox.

Exaggeration of Bacteriology.—We observe how neglect of the Law of Unity is misleading the intellect in relation to bacteriology. This subject, useful if pursued without cruelty and in subordination to higher facts, has become a mischievous exaggeration¹ both as to what it signifies and as to what it may lead to.

The majority of our active and intelligent medical investigators are now intensely engaged in the search for a microbe as the primary *cause* of every disease known to humanity. Cancer, leprosy, fevers, hydrophobia, diphtheria, tetanus, insanity, etc., are being largely studied by this imperfect method, in hope of finding a characteristic microbe which can be pronounced the essential cause of the disease. The great mental energy of biological investigators is diverted from sanitary investigation to the search for fresh bacilli. Admirable perseverance, acute ingenuity, unwearied energy are devoted to this search.

Advantage has been taken of the helplessness of

¹ Dr. Adametz states that 'one gramme of Gruyère cheese contains 90,000 microbes; after seventy days they had increased to 800,000. A gramme of another kind of cheese contained about two million microbes, whilst a piece of the rind contained about five million!'

the lower animals to carry on a system of experimentation upon them, the extent and ruthlessness of which has never before been attempted. Disease is studiously propagated. Myriads of healthy living creatures are filled with loathsome disease in order to furnish 'material' for experimentation. So many kilos of dog or rabbit (used for injecting disease, or noted as more or less slowly resisting the death thus gradually inflicted) is a common expression now used in experimentation, and supposed to give 'scientific accuracy' to experiments. It is a pitiful intellectual fallacy of short-sighted materialism that supposes it possible to obtain 'scientific accuracy' by regarding so many kilos of living dog as if they could be experimented on as so many kilos of dead matter, or as if they were the materials of a steam-engine, which can be taken apart, examined, cleaned, tested, and put together again in complete working order.

This diversion of intellectual ability from the true path of sanitation by an exaggerated search for bacilli leads directly to the dangerous practice of inoculation, which threatens the future deterioration of the human race. As one of the most distinguished of our hygienists, the late Dr. Benjamin Ward Richardson, has pronounced, 'inoculation is bad sanitation.'¹

¹ This is virtually accepted by one of the foremost advocates of inoculation, who, acknowledging that preventive inoculation ought to be strictly limited, adds: 'Inoculation is only a palliative measure, for the first object to be aimed at is the stamping out of infectious disease, and I cannot help thinking that the day will come when preventive inoculation will be a thing of the past.'

Sanitary law teaches us that disease is produced by many causes, not solely by a specific microbe.

These causes are insanitary conditions, which impair or destroy the agents required by our human constitution for its healthy growth, and which act with varying force according to individual tendency. These insanitary conditions, in the course of their operation upon varying individual constitutions, produce various forms of disease, as chill may produce rheumatism, bronchitis, or diarrhœa, according to idiosyncrasy. These varying idiosyncrasies of individuals, both in their physical and mental aspects, as well as the varying action of vital force in different classes of animals, will always vitiate the theories of materialistic investigators. Thus the same poison will not destroy all classes of living creatures. A healthy young dog has been known to resist for months strenuous efforts made to disease him in a particular way. The same disease germs produce quite different forms of disturbance in men and in rabbits.

'We possess no clue to the immunity of certain animals from poison. Rabbits fed on belladonna show no signs of injury, although their flesh becomes poisonous to those who eat it. Pigeons and other herbivora may be safe from what will cause paralysis and asphyxia in other animals. The meat of goats may similarly become poisonous.

'Chickens, cats, birds, rodents, are variously affected by poisons, some thriving on what will kill other animals. The whole cat tribe is said to be always proof against morphia.'

Drs. Hahn and von Bergmann, in attempting to justify their cancer-grafting experiments on hospital patients, affirm that 'it was necessary to select human beings for experiment, inasmuch as none of the lower animals would have been suitable for their purpose.'

Sanitary law teaches us that unhealthy conditions vitiate the living micro-organisms with which we are surrounded, and which, naturally beneficial, may become, through violation of natural law, morbid germs, capable of spreading their various forms of disease amongst persons predisposed to such disease. Thus, according to sanitary law, the violated health conditions (vitiating naturally innocuous particles) are the primary cause of disease; the morbid germ or bacillus is only the secondary cause.

The new bacteriological theory directly contradicts this important law of sanitary experience, and in opposition to it authoritatively announces that contagious or infectious disease can never be produced without the antecedent microbe. It was in defence of this untenable theory that the distinguished professor claimed the 'right of science to dictate.'

The great mistake, therefore, made by the Hygienic Congress was the neglect of mind as an indispensable and prominent factor in Health, and the exaltation of bacteriology, with the theories based upon it, into the chief point of interest and importance.

The modern exaggeration of bacteriology, with its theory of inoculation, must be steadily opposed by all who realize the power and growing influence of

spiritual life. The injurious results of this exaggeration may be summarized as follows :

The Practical Dangers arising from erroneous Scientific Method.—1. It diverts invaluable intellectual activity into methods of comparatively futile investigation. These investigations lead very widely to the exercise of fraud and cruelty upon the lower animals, and tend to reckless experiment on the poor. They waste much time and spread the contagion of intellectual error amongst the students of all our medical schools, where the false practices of experimentation are increasingly carried on. They also pervert the moral sense of the great army of assistants, caretakers, porters, nurses, and others connected with our medical institutions, who become aware of the cruel practices which so largely accompany this method of research.

2. This perversion of medical activity misleads our Parliamentary representatives, who are bewildered by pseudo-science authoritatively announcing itself as Truth, and permits a rapid increase of officialism to crush opposition and force the dicta of superficial 'science' upon the protesting conscience of intelligent people. It also misleads the community by fallacious articles in popular magazines, in which facts, theories, statistics, and assertions, often incorrect, are given with an imposing air of science, in relation to which the ordinary reader is quite unable to discriminate the true from the false.

3. The diversion of medical activity from the

true path of Preventive Medicine not only hinders the progress of sanitation, but is producing an increasing revolt of common-sense and popular feeling against what are erroneously supposed to be the necessary methods of medicine and the practice of dispensary and hospital. This growing feeling in the community increases the dread with which the poor generally regard the hospital, and it also seriously diminishes the pecuniary support which the well-to-do would otherwise gladly extend to their sick and suffering fellow-creatures.

Conclusion.—In considering the foregoing record of facts it is seen to be a fundamental error, not only in a Hygienic Congress, but in *all* medical thought and practice, to look only at the body, and not consider those spiritual facts which precede, animate, and succeed the flesh. It is also certain that in the application of hygiene to daily life we may as well pour water into a sieve as hope to enforce permanently practical hygienic measures without enlisting the goodwill of the people in their observance.

As the solution of the two great problems of hygiene—viz., ‘What are the laws and conditions of healthy growth?’ and ‘How can these conditions be secured?’ rests upon principles of spiritual truth, those principles are of fundamental importance in directing human intelligence into right lines of investigation. Being compelled to use the imperfect symbolism of language, we speak of mind and matter,

of spiritualism and materialism, as if they were separate or contradictory entities. But this is a limitation in the expression of thought to be recognised and carefully guarded against in thought itself. There can be no real contradiction between Religion and Science; they are only varying manifestations in human thought of Truth, which is essentially one. Our effort must be to unite these manifestations in thought, and thus gain the only safe guidance possible to us for practical action.

The great fundamental principle of our human constitution is incarnation—*i.e.*, spirit shaping form—the Universal manifesting itself in the phenomenal. This principle is the foundation of sanitary science. It forms the basis of the Moral Law which must be the guide of science.

When this principle is understood and applied, it enlarges the intellect and enlightens the conscience. It transforms the narrow, self-centred or arrogant individual into the humble inquirer and sharer of the larger Diviner life.

This universalization of the individual resides essentially in the Will of man, and is the foundation of conscience—conscience which, gradually enlarged by the growing intellect, is the great guide of the human race in its struggle upwards.

This universalization of the primitive self-centred life leads to the realization of Sin. When we enter that Garden of Gethsemane where the woes of the world, the murders and seductions, the cruelties and

hypocrisies, are revealed in all their hideousness, we realize that we are partakers in this Sin; for it is the result of that self-centred arrogance, that selfishness with which each one has to fight, and which is the essence of Sin. It is through this tremendous conviction that all must enter into that life of the Universal, where alone is true freedom, and where alone the fulness of individual life is to be found. Only by this saturation with the Universal does that hatred of Sin arise which makes sins henceforth impossible.

Then the recognition of Right and Wrong in human action becomes clear, and the supremacy of the Moral Law inevitable.

It is indispensable to refer to these deeper principles of existence in considering their varied application. They give force to those condensed maxims of practical wisdom which, transmitted to us from the experience of our forefathers, are guides for our present daily life.

'Never do evil that good may come' is a proverb so familiar to us in various forms that we fail to see the profound wisdom which it expresses.

It is a confession of that intellectual limitation which cannot foresee complicated results: it is an acceptance of that inflowing light of conscience (however dim) by which everyone must honestly walk; it is the subjection of the narrow, self-centred Will to the Universal Life by which the individual becomes a free co-worker with the Divine.

Physiology rightly studied in the light of this

fundamental principle—incarnation—vindicates the supremacy of the Moral Law, which is the Law of Unity, or transfiguration of the Self. It gives the perception of Right and Wrong. The Law of the Universal, reverently and intelligently studied, will guide all practical action; it will show us how to build a hospital, plan a medical school, organize an institute of preventive medicine, legislate for a community, or guide the individual life.

The Law of Unity relegates bacteriology to its proper place as a branch of pathology, and proves that truth cannot be gained by searching into the quivering organs of tortured animals. It shows us also that individual health cannot be secured by building a Chinese wall around one's self. We cannot stop the revolution of the earth in an atmosphere which may bring bacilli from inundated China, from starved Russia, from leprous India, or from the slums of the West.

We must work gradually towards the realization of our ideal—Health—and work in many directions and on many lines. Advancing sanitation will place our future hospitals in country neighbourhoods, with only temporary receiving houses and dispensaries in large towns.

'The oldest hospitals were the temples of Esculapius, where Divine assistance was sought.' To these Asclepeia, always erected on healthy sites, hard-by fresh springs and surrounded by shady groves, the sick and maimed resorted to seek the aid of the 'god of Health.' To this wisdom of the ancients we must

certainly return when the present tendency to subordinate the welfare of the sick to the convenience of students be checked.

The most urgent need which now exists in our profession is the establishment of an Institute of Preventive Medicine guided by the Moral Law. Such an Institute will recognise that mind and matter meet in the fact called Life, will reverently study all the conditions and laws of healthy life, and not be diverted from this great aim by curious investigations into artificially propagated disease.

The study of the biological sciences, comparative and human physiology, morphology, histology, electro-chemical action, etc., is most important and necessary for the advancement of medical science; but these can be studied without any violation of the moral Law of Unity. It is necessary to study the forms and functions of life which are manifested in organisms lower than man. The laws which govern animal and vegetable growth form important steps towards our increasing knowledge of human physiology and sanitary law; but these can only yield true and available facts when studied through the natural and healthy working of the objects of study. The artificial production of mental or physical disease by fear and suffering vitiates the natural order of life, and leads to error in observation and induction from such observation. Torture is not only unsuited to laboratory work, but is an inevitable source of error in results. A laboratory or work-room should never be degraded into a torture-

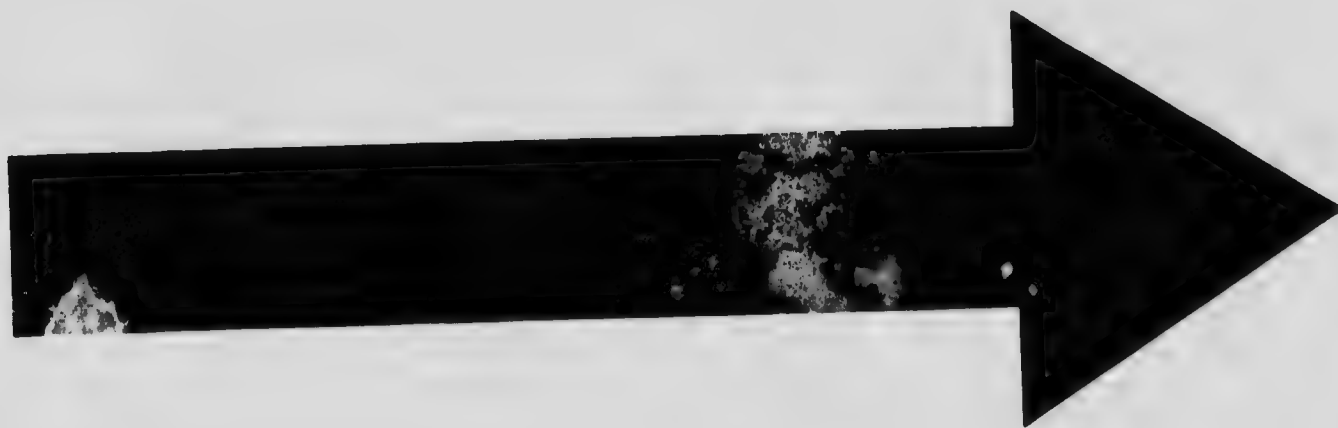
chamber. Experiment should never degenerate into curiosity or inhumanity.¹

In the future a wise Institute of Preventive Medicine may possibly be placed in the healthy country. Around such an Institute for wise research a well-planned health colony could grow up, which would be of enormous utility to the overworked brains of our most valuable people. It would be a health centre where the weary brain could be refreshed and its vigour renewed by the restorative effects of manual labour. Guided by true science, it would teach our teachers and our legislators. Here they might learn to reverence those laws of health which are equally violated by overworked brains and overworked muscles. An Institute of Preventive Medicine genuinely 'scientific' would be the soul of such a health centre.

But such a colony can only be created when narrow selfhood has been transfigured by the universal life; for, as has been finely said: 'True social integration will follow upon spiritual integration, and upon nothing else.'

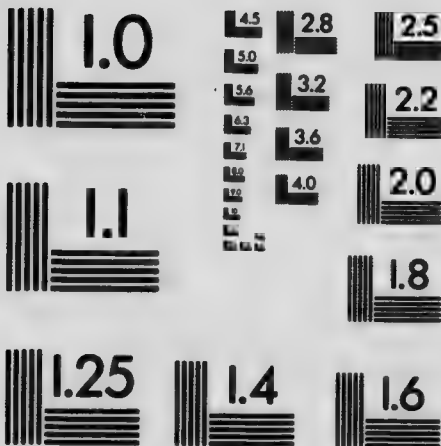
Whilst working towards a fuller realization of our ideal we must respect and aid, as far as we can, those isolated efforts to deal with special transgressions of the Moral Law which are really steps onward in the

¹ The greatest injury which is now being done to medicine and the advancement of hygiene is the abuse of the word 'research' and the degradation of this noble exercise of human intellect by methods of application not suited to the subject of investigation.



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growth of humanity. Separate efforts to advance temperance and purity, justice to women and children, to the poor and weak, to the humbler animals, our fellow-creatures, are all efforts to be heartily encouraged. Each effort forms a little step out of selfishness into large religious life. Although those who realize the Law of Unity cannot rest in any isolated work, yet it is by the honest fighting of sins that we grow into that hatred of Sin which will lead to its destruction; and by the slow perception of truths we gradually approach that ineffable Light of Truth which will melt away the chains of selfhood, and set us free in the larger liberty of the Universal Life.

APPENDIX (PAGE 56)

On the Humane Prevention of Rabies

IN the course of a discussion on the subject of rabies, a suggestion was made that a resolution should be passed by the Section and sent to Government, recommending measures for the prevention of hydrophobia.

As two opposite methods of dealing with rabies had been ably supported by Professors Roux and Fleming, I called attention to the fact that nothing had been said in the discussion of the sufferings necessarily inflicted upon animals where the Pasteur method advocated by Professor Roux was adopted, and I stated that in a Pasteur Institute dogs were kept in a state of madness. I therefore recommended that Municipal and County Regulations, with their excellent results, as shown by Professor Fleming of London, and Professor Ostertag of Berlin, should be adopted rather than Pasteurian methods.

In illustration of the sufferings of dogs when made mad, I referred to my visit to the Rue Dutôt on June 2, 1889, where, after inspecting the Hall of rabbits, guinea-pigs, and pigeons used in experiments

for rabies, anthrax, etc., I went to the cages of three dogs also used for experiments in rabies, who were in various stages of madness, one dying after its ten days' agony; a second in the full fury of madness; a third in frantic terror clinging to the bars of his cage, imploring to be let out.

Professor Roux's statement in opposition to my recommendation of the humaner methods of dealing with rabies seemed to infer that dogs were not rendered mad in a Pasteur Institute or in dealing with rabies. But when I stated to the Professor that I had myself seen this series of three dogs being made mad, he replied: 'Oh, you might have seen a great many more, but they are not to inoculate people.'

Now, it is well known from experience that it is too dangerous to inoculate direct from the dog to the human being. But the fact that dogs are constantly made mad for experiment in the Pasteur Institute, or in any institute that adopts Pasteurian methods, should be honestly acknowledged, not evaded. The fact that this frightful disease of rabies is kept up for purposes of experiment, although the virus be transmitted in changed form through other animals for the inoculation of human beings, is in itself a grave fact, and it bears directly on the point which I dwelt on at the Congress—viz., that in choosing the method of protecting humanity from a rare but frightful disease, the method that does not involve sufferings to animals should be adopted by a Christian nation.

SCIENTIFIC METHOD IN BIOLOGY

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INTRODUCTION

A CONTROVERSY is persistently carried on between an increasing body of the non-professional laity and an important section of the medical profession, in relation to the methods pursued in investigating biological phenomena.

The criticism of medical research by non-medical people is naturally resented by some who are engaged in experimentation, and it is stated seriously that non-scientific persons will impede progress if they interfere with or succeed in restricting the efforts of those who specially devote themselves to this branch of research.

This controversy is still going on in ever-widening circles, and it is bound to do so until the present confusion of thought which exists on this subject is removed, and the broad distinction between right and wrong experimentation is more fully acknowledged and more clearly defined. Our relation to the lower animals has never yet been brought fully into the clear light of reason and conscience. Yet in the order of Providential development it must so come forward.

As advancing humanity has gradually recognised natural rights as existing in the various races of

mankind, and is carrying on a persistent warfare against human slavery, and slowly awakening to the moral crime of introducing disease and vice amongst native races, and the rights as well as duties of women and of children are being gradually recognised, so the time has come when the natural rights of inferior living creatures must be seriously studied.

This study has become obligatory, not only in regard to the welfare of the brute creation, but for the sake of our own human growth as rational and moral beings.

The common-sense of mankind recognises our right to use the lower animals for human benefit, whilst our superior intelligence gives us the power to so use them. But 'can' and 'ought' are different aspects of our mental constitution, which require to be harmonized. What we can do is not the true measure of what we ought to do in any department of life.

We can starve a child or lash a horse to death, but we have no right to do so.

The laws of our human constitution compel us to recognise that intellect and conscience, although essential parts, are not identical parts of our nature. Long experience shows us that social progress can only become permanent when conscience guides intelligence.

How far the guidance of conscience can extend, with the practical results to medical research involved in the recognition of such guidance, forms the subject of present consideration.

CHAPTER I

The Growth of Conscience

Through the gradual and harmonious development of intelligence with that element in our nature that we name conscience that the human race passes from lower to higher states of civilization. In pursuing our ideals, conscience is our instinctive monitor of right and wrong.

Our great naturalist, Darwin, laid down as a law of evolution that 'the moral sense, or conscience, is by far the most important of the differences between man and the lower animals. Duty—"ought"—is the most noble of all the attributes of man.'

Victor Hugo, with the prophetic insight of genius, calls conscience 'that modicum of innate science with which each one is born.'

The growth of human conscience in its perception of justice and in its sympathetic relation to creation is the surest measure of individual and national progress. Various intellectual theories may be formed as to the origin and growth of conscience. It may be held to be intuitive, springing up as inevitably as the instinctive feelings born with the

natural relations of life; or it may be looked upon as gradually evolved, the 'result of countless experiences of fear, love, utility, transmitted through generations.'

But however originating, conscience is a positive and potent fact. It is, indeed, the mightiest factor in social life. It is the great controller of selfhood. It enlarges human character and guides human conduct. The deepening of this principle through the growth of justice and sympathy marks an advancement in the type of humanity. Increasing respect for life is one of the clearest signs of growing conscience. Our reverence for the principle of life grows with our enlarging intellectual perception of its universality and its unlimited power of development.

As life is marked by activity, and cannot remain stationary, so conscience shares this law of life. It must inevitably advance or retrograde.

The degradation as well as the development of conscience may be seen amongst us in the midst of our present civilization. It is contrary to the most rudimentary element of conscience to feed upon one's kind, and cannibal tribes who devour their captives represent the lowest type of humanity; even the dogs of the Arctic voyager will endure the slow agony of starvation for days before their human taskmasters can compel them to eat the flesh of their companions. The well-known naturalist, Mr. W. H. Hudson, states that wolves, when pressed with hunger, will sometimes devour a fellow-wolf;

as a rule, however, rapacious animals will starve to death rather than prey upon one of their own kind.

Yet shipwrecked sailors, even of our own English race, have been known to drink the blood and eat the flesh of their own comrades when confronted by starvation.

We find that intelligence may exist without conscience, but the human type changes to a destructive force when this separation takes place. A lamentable example of the social danger created by the destruction or absence of rudimentary conscience amongst us is shown by the betrayal and murder of the little boy Eccles in Liverpool, for the sake of his clothes, by his two companions of eight and nine years old. There was the deliberate plot to entice him to a pond; the throwing him three times into the water as he scrambled out; the final holding him under water until all struggle had ceased. These facts make a striking, but not unique, object-lesson, showing how intelligence may exist without conscience amongst all our appliances of civilization, and the danger of such separation.

Examples of the social devastation produced by official corruption and business dishonesty are too numerous to be detailed; they are seen in what are called civilized countries—in London, Paris, Rome, and across the ocean. The lack of conscience in public and private transactions creates social misery proportioned to its extent.

Recognising, therefore, that this distinctive principle of conscience is a fact of gradual development,

that it grows by the union of the moral with the intellectual elements in our nature, and that the far-reaching consequences for good or evil of vivid or dulled conscience in the individual and the nation are far beyond our power of foresight, a grave responsibility rests upon us in this matter. We are bound to realize that any custom, or method of education, or proposed course of action, that seems to violate the natural instincts of humanity, or is contrary to the present enlightened conscience of any section of our Anglo-American race, demands imperatively the most careful consideration on our part.

CHAPTER II

Conscience in Medicine

EVERY intelligent member of the medical profession will certainly recognise the special value of human conscience in the profession.

The problems which are involved in the practice of the beneficent art, the absolute reliance which the anxious patient is compelled to place in his physician, the helplessness of the poor, who form so large a majority of those who need medical aid, and who are without the defences of wealth and station, show the need of keen moral sense, as well as intelligence, in those who practise the art of medicine.

The very discoveries of medical science enforce this necessity; for the possibility of abuse in the employment of such beneficent agents as anæsthetics and hypnotism, by incompetent or conscienceless operators, is a very serious fact.

This special responsibility of the medical profession to society is greatly increased by the fact that the training of a very large section of our intelligent youth during the important years of early manhood rests upon them. The moral as well as intellectual

influence exerted by those who guide the college, the hospital, the dispensary, and post-graduate classes, will mould the future action of one of the most influential portions of the community—those, viz., on whom the health of the nation chiefly rests.

Now, whilst all recognise the need of the trained and skilful care of a nation's health, and perceive also that rightly organized medical schools and hospitals are of great value in educating our health-guardians, how is it that a profound distrust of these institutions has grown up in our midst, that the support of hospitals becomes increasingly difficult, whilst at the same time the sentiment of benevolence and desire to help the poor is constantly extended?

How is it that the beneficent and necessary art of medicine no longer commands that respect and confidence which its essential character as part of our social institutions would seem to demand?

The answer to these serious questions involves both moral and intellectual considerations. These problems have arisen from failure to perceive that in education moral and intellectual activity cannot be advantageously divorced, or that one portion of our complex nature cannot be beneficially developed whilst other portions are entirely ignored or injured.

Our medical schools, whilst sharpening the intellectual faculties of their students, must be careful that their modes of teaching bring with them no deterioration of that important faculty of their students—the moral sense. As conscience or the

moral sense is unequally developed in human beings, but is indispensable to the physician in his relations with patients, any apathy or negligence in this respect by the trainers of youth may become a national danger.

CHAPTER III

The Moral Element in Research

MORALITY as a guide in biological science is based upon the practical distinction between organic and inorganic Nature.

If medical progress simply involved the investigation of inorganic Nature, the general public would be only learners, gladly receiving such information in geology, chemistry, astronomy, or physics, as specialists in those branches of physical science were good enough to impart to the unlearned.

But directly scientific research passes beyond the distinctive realm of matter, moulded and transformed by general energy, but not affected by individual will, it has to deal with a very different principle—viz., life. This vital distinction has been well laid down by one of our eminent medical authorities as follows: 'During the slow growth of medical knowledge it has become more and more plain that physics, chemistry, and biology are distinct sciences, with methods of their own and inductions of their own, each of the latter terms in the series using the results of its predecessors, and adding new results of

its own. Although life is a structure built up of physical and chemical facts, yet to the building, to the arrangement, to the ordering of those facts, there goes something that neither physics nor chemistry can explain, any more than algebra can explain the behaviour of a magnet. To strive to interpret the series of events which make up the life of an animal in terms of chemical change (metabolism), or of conservation or expenditure of energy, is an endeavour which will fail.'

As the brute creation as well as human beings share in a physical organization which expresses each variety of life, there is not the same sharply-dividing line between the various categories of animal life as there is between organic and inorganic Nature. Biogenesis, or life generated by life, is the distinctive feature of organic Nature. We are linked to living creatures of higher or lower nature by the power of educating or subduing them, and by all those varying relations involved in the mystery of life.

The distinctive position of man, as an animal placed at the head of the animal world, necessarily creates serious responsibility on the part of the higher towards the lower creature.

This basis of moral responsibility extends in kind, if not in degree, to all life. It necessitates a directing conscience which shall guide all our intellectual and practical relations with every category of life.

This moral element enters unavoidably into our

treatment of animal life from its lowest to its highest form. Our treatment of a monkey or a prince contains an element of moral attitude which does not exist in our relation to inorganic Nature.

It is a difference of kind as well as of degree, which it is blindness to ignore.

The divergence which now exists between some biological investigators and their critics rests upon the failure to recognise that moral error may engender intellectual error.

The special subject which has produced this controversy is the present method of using the lower animals in biological research, which has so enormously extended of late years. The essence of the controversy is the ethical question—viz., Have we a right to torture?

It must be distinctly understood that there is here no question of our right under certain circumstances to put to death. Neither is there a doubt of the utility of rational experiment and of research. But the right to put to death in the most humane manner known to us, and the right to torture to death, are two widely different questions.

We have no right, for any purpose whatever, to torture a living creature to death, either by the mutilation of the organs, the slow deprivation of the necessary conditions of life, or the still slower process of destroying by the inoculation of disease.

CHAPTER IV

Right and Wrong Method

IT must be carefully noted that the wrong involved in inflicting torture upon a living creature is the violation of a rational principle. The employment of torture or of painful experiment in biological research is not a question of the right to gain knowledge; it is a question of how we seek to gain knowledge. It applies directly to method.

Thus, the fact observed by Paget, that in a patient who vomited all fat, the pancreas alone was found on post-mortem examination to be diseased, is worth more than a series of experiments on lower animals of different constitution from our own.

In the slow approach towards truth, which is the great object of science, no single method is indispensable. The human mind is so full of activities, Nature presents such an infinite variety of resources, that progress in research can never be hindered by the choice of right instead of wrong method.

This is well stated by one of our most experienced investigators when he says: 'Methods run with

the manners and customs of the ages. In science there is no one method that can be considered indispensable. Attributes are indispensable; observation, industry, accuracy, are indispensable; methods are not. They may be convenient, they may be useful, they may be expedient, but nothing more.¹

This admirable statement throws a flood of light upon the confusion and perplexity of the present controversy. It shows the error of both the so-called unscientific and scientific parties. It shows the error (not unnatural), in the former, of confounding together experiment, research, laboratory, and scientific investigation, and classing them under one indiscriminate ban of cruelty; it also shows the narrow vision and false reasoning of those who claim that right and wrong have no meaning when applied to the investigation of phenomena supposed to be revealed by the senses, or state that the collecting of so-called facts, named knowledge, is an end in itself, to be unrestrained and justified in itself.

That interesting book, *The Naturalist in La Plata*, in narrating the author's observation of the natural fearlessness of all wild animals towards man, the careful research into life-habits that can be carried on where this fearlessness is not betrayed, and the susceptibility to kindness which exists amongst all the lower animals to their sovereign,

¹ Sir B. W. Richardson, *Biological Experimentation: its Functions and Limits*, p. 15.

man, furnishes a striking and delightful suggestion as to the *method* which future research should take.¹

It is the distinctive moral relation existing in the plane of animal life that makes our connection with the organic world a different and more comprehensive relation than that which exists with inorganic Nature. It places research in the biological sciences on a different plane from study of the physical sciences.

Therefore, whilst it would be folly for ordinary people to criticise the methods of experts in physical science, it would be dastardly dereliction of duty not to consider the methods employed in biological science.

The subject of experimentation upon the lower animals having two aspects—an ethical and an intellectual one—the medical profession will be wise to welcome all honest and kindly criticism and suggestion in the most difficult of all studies—viz., the study of life. It must be recognised that the people are absolutely in their right in refusing to submit to dictation in what concerns their relation to animal life, of which they are the responsible head.

¹ This sound method is well exemplified in the writings of the French naturalist, Le Roy.

CHAPTER V

The Necessity of Medical Research

WHILST fully recognising the right of the laity to criticise scientific method when it deals with sentient animals, fashioned on the same general plan as ourselves, and capable of fear, pain, affection and gratitude, there is another aspect of the subject which we are bound to consider.

The present condition of medicine is that of an art, not of a science. It is erroneous to speak of the science of medicine. There exists uncertainty in diagnosis, uncertainty in the action of remedies, ignorance of individual idiosyncrasy, and terrible inability to meet such devastating diseases as cancer, consumption, leprosy, etc.

No one outside the profession can fully realize the grave responsibility, even desperate anxiety, felt by the conscientious physician when life or death seems to depend upon his action and he knows that medical resources are not equal to the occasion. It is a noble desire for the advancement of the beneficent art of medicine which makes the great body of busy doctors eagerly listen to those who

are supposed to speak with authority, and hail with hope every announcement of supposed discovery which seems to promise improved practical results.

This is really a sound humane attitude of mind in that vast body of the profession who are unable, from the pressure of practical life, to devote themselves to investigation—a profession which has always had its heroes and martyrs, who have not shrunk from risking their lives in the service and for the advancement of their noble art.

Those also who are in the profession can most fully estimate the real and beneficial results, both in surgery and medicine, derived from careful and persistent research, notwithstanding the severe disappointment often caused by the theoretical error and unjustifiable practice resulting from rivalry in erroneous methods of investigation. The conquest of pain and diminution of nervous shock in necessary surgical operations,¹ the disappearance of blood-poisoning, hospital gangrene, and erysipelas, which were the scourges of our public institutions in a former generation, are immense gains, due to the discovery of anæsthetics, antiseptics, and to advancing sanitation. These blessings are the direct outcome of persevering and skilful clinical observation, of careful work in the laboratory, of

¹ The former horrors of the hospital operating-room are graphically described from personal observation in Sir B. W. Richardson's treatise, *The Mastery of Pain*.

humane experiment, and of happy accident; they are not derived from cruel experimentation.

The successful control of that terrible disease—puerperal fever—which formerly destroyed such a multitude of women, is a striking conquest of humane method in modern medicine. When I was a student in La Maternité of Paris in 1849, this destructive malady of lying-in women produced a mortality varying from 10 to 15 per cent. But when I visited La Maternité in 1889 the mortality was reduced to a little over 1 per cent. This was due to rigorous cleanliness, sanitation, and the use of antiseptics, directed by the skilful *sage femme en chef*, Madame Henri, in spite of the old and unsuitable buildings and the depressing status of many of the patients.

A still more satisfactory result is shown in the Clapham Maternity Hospital, in London, where not a single death occurred amongst the 760 cases first received into the institution.

This excellent result still continues under the same administration. Of the 4,000 lying-in cases received in the hospital during the thirteen years it has existed, there has been no death from puerperal fever. This excellent record has been attained by scrupulous cleanliness, absolute isolation on the occurrence of suspicious symptoms, by excellent nursing, and constant oversight by the doctors in charge. Even in the out-patient department, where the conditions of living are not under such strict medical control, the deaths from this frightful malady

have only amounted to 5 in 12,500 cases under the same enlightened direction.

This great and beneficent reform in the first and world-wide branch of medicine, by means of which the lives of innumerable women in all our large centres of civilization have been saved, is the result of scientific research. It was initiated and successfully carried out by Semmelweis, of Vienna, and is a striking instance of the value of research carried on by the use of the comparative method, with absolutely no resort to experiment. The history of this reform, the methods by which it was accomplished, the opposition it encountered in the profession itself, and its triumphant vindication, are well worth serious study. An account of this valuable investigation and other important discoveries by justifiable methods of inquiry are given to English readers by the admirable translation published by the New Sydenham Society.¹

Medical research, therefore, is not only justifiable, but obligatory in a profession that is specially charged with the care and advancement of individual and national health, and, as we shall see later, observation, induction, and rational experiment form the essential methods of scientific inquiry.

These two facts—viz., the necessity of advance in medical knowledge and the methods of investiga-

¹ See the standard work of Hirsch, *Handbook of Geographical and Historical Pathology* (New Sydenham Society), vol. ii., pp. 416-466. The value of this translation is greatly increased by its excellent index.

tion necessary for such advance—must be distinctly recognised by sincere reformers, and should shield the profession from that indiscriminate reproach which is often made against it as a whole; for such hostility tends to strengthen that undue *esprit de corps* which often hinders sound medical progress in the profession.

CHAPTER VI

Restriction of Experiment

WHEN we investigate the popular or ethical aspect of so-called scientific research made upon living animals, we are at once met by facts which imperatively demand both serious thought and determined action if we would not be participators in the degradation of human conscience. We are confronted with the enormous increase in such experiments which has taken place within the last thirty years, as well as in the severity of the sufferings inflicted. This increase is going on in England as well as in foreign countries.¹ It is growing in many cases, not only without any benefit to the human race, but also without reference to any supposed beneficial result as its attempted justification.

The volume of facts and evidence collected by Mr. Colam (the able Secretary of the Royal Society

¹ Thus, the authorities of Paris ordered twenty friendless dogs to be tied to the branches of trees in a wood, and a shell made in the municipal laboratory exploded amongst them, riddling and mangling them fearfully.

for the Protection of Animals), and published by that society in 1876, is a permanent record of great value. It enables us to measure the growth of experimentation in England, not only from 1862 to 1876, when the present Cruelty to Animals Bill was enacted, but it also forms a point of comparison for testing the increase of vivisectional methods since 1876 to the present day, when these easy but often fallacious methods of research have become universal in medical investigation and medical instruction.

In 1869 there were very few places where the experimentation on animals could be carried on, such investigations being made by men of rare ability, and for a definite object. There were no class demonstrations and no students encouraged to experiment. But in 1892 there were 180 persons licensed in this country, and over 3,960 experiments performed, numbers which increase with each year.

The Effect on Students and Subordinates.—A point for serious consideration is the effect produced upon the unformed minds of students of medicine by the introduction of experimentation upon living animals into our medical schools and hospitals.

The employment of destructive experimentation on living creatures is now introduced as a part of the ordinary instruction of medical students in the fundamental study—physiology. This is a novelty of the present generation. During the whole course of my medical studies, fifty years ago, I never saw a living creature vivisected for the instruction of

students. The same is true of the experience of most of the able physicians of an older generation.

Now, however, nearly every medical school has its store of imprisoned living creatures awaiting their fate, from the large frogs imported from Germany, the mice, rabbits, cats, and dogs of home production, to the cargoes of monkeys brought to our foggy climate from tropical Africa. They form an enormous mass of living creatures, kept for the attempted demonstration of vital action in the lecture-room, or for the study of diseased processes in the physiological laboratory.

It is a fallacy (although proclaimed in high places) that the ordinary student of medicine must be prepared for his practical work as a physician for men by watching the opening of chest, abdomen, brain, or cutting into the delicate vital organs of lower animals. Such demonstration is a thrilling spectacle to inexperienced students. It appeals to that love of excitement which makes them rush to a surgical operation, or to an extraordinary medical case, whilst the commonplace but all-important bedside observation seems dull in comparison. Yet patient work in the anatomical and microscopic rooms, and in the chemical laboratory for general and animal chemistry and close clinical study, all of which involve no form of suffering, are of primary importance. The genius of a Professor as an instructor is shown by his ability to make his pupils realize this.

Destructive experimentation on helpless animals,

not for their own benefit, is a demoralizing practice. The student becomes familiar with the use of gags, straps, screws, and all the paraphernalia of ingenious instruments invented for overpowering the resistance of the living creature, or for guarding the operator from injury in case the anæsthetic, when used, should give out too soon. He learns also how easy it is to experiment in secret.

By advanced instruction and post-graduate classes the student is led on to take active part under licensed authority in this fascinating, but morally dangerous, method of study. Moreover, the large body of subordinates who are necessary to take charge of and prepare the animals, are trained in indifference to suffering, without any excuse of intellectual gain, and the same injurious influence extends in ever-widening circles—to the traders who invent and sell instruments of torture, and to those who supply the living material.

Now, the natural instinct to be cherished in human beings is protection and kindness to infancy and all helpless creatures, not indifference to suffering or wilful infliction of it. As human conscience is a thing of growth or degradation, the natural shrinking from needless pain can soon be hardened into callousness. Conversing with medical students in relation to the effect made upon them by witnessing vivisections even under chloroform, I have found that their experience is always the same—viz., first, the shock of repulsion, then tolerance, and then, if often repeated, indifference.

The moral deterioration necessarily induced in those to whom suffering becomes a frequent spectacle is noted by the *Englishman in Paris*, from personal experience. After speaking of the inhumanity produced by the daily sight of blood in the originally honest bourgeois, who became the 'Conventionnels' of the French Revolution in 1793, he writes as follows: 'I have witnessed three executions. After Pommeraye's execution I was ill for a week; after Troppmann's the effect soon wore off in three days; after Campa's I ceased to think about it in twenty-four hours. Then I made a vow that no power on earth should draw me to the Place de la Roquette again. But men generally regard their growing imperviousness as a sign of mental force, and pride themselves upon it.'

In Marie Bashkertseff's *Journal* is a striking passage which describes the effect of a Spanish bull-fight. She says: 'I was able to maintain a tranquil air in full view of the butchery, carried on with the utmost refinement of cruelty. One leaves the scene slightly intoxicated with blood, and feeling desirous to thrust a lance into the neck of every person one meets. I stuck my knife into the melon I was cutting at table as if it were a banderilla I were planting in the hide of a bull, and the pulp seemed like the palpitating flesh of the wounded animal. The sight is one that makes the knees tremble and the head throb. It is a lesson in murder.'

The moral distinction between heroism shown

when suffering is witnessed for the purpose of aiding the sufferer and that evinced for the selfish desire of individual gain or excitement, was strikingly exhibited by a German nurse whom we sent on to the army during the Civil War in America. This frail-looking woman drifted on to the front, and, after the Battle of Gettysburg, donning a pair of man's boots, wading in pools of blood and mud, spent two days and nights on the field of slaughter, drawing out still breathing bodies from the heaps of slain, binding up wounds, giving a draught of water, placing a rough pillow under the head, in an unselfish enthusiasm that knew neither hunger nor fatigue. The ghastly wounds, the blood, the shrieks and groans of that horrid scene served but as fuel to the fire of humanity that consumed her.

The Effect on Teachers or Practitioners of Medicine.—In considering the subject of experimentation, reason requires that we realize the necessary distinction between the methods employed in training students for a practical profession and the exceptional position of the few geniuses who possess the rare combination of qualities essential to scientific investigation. In calling attention to this distinction we do not condone torture, for this can be proved to be unscientific. But it emphasizes a growing and mischievous evil of the present day when numbers of ordinary teachers of physiology, whose gifts are limited and whose especial business is to instruct students in the knowledge which has been attained, consider themselves capable of original

scientific research, or attempt to repeat before either students or popular audiences so-called demonstrations on living creatures.

The showy plan of experimenting on animals is undoubtedly a great temptation to teachers. Such practice readily gains the gratifying applause of inexperienced learners, who are misled by an appearance of conclusiveness in the lectures, which they are quite incompetent to gauge. But the influence thus exercised is a harmful one, diverting the mind from right methods of study.

The temptation to make a display before imperfectly informed persons is too great. If the profession is to advance in popular esteem, it will recognise that the unfeeling destruction of living creatures, even the pithing of a frog or the dissection of the salivary glands of a living mouse, is a false method of forming the minds of students, which should be entirely abandoned.

We must here note the demand lately made by some leading members of the profession for increased facilities for experimentation on animals. Now, anyone who studies the Cruelty to Animals Bill (30 and 31 Vict.), which in 1876 licensed vivisection in Great Britain,¹ will see how easy it now is to obtain a license, and how carefully the provisions of the Bill are arranged to give freedom to experimentation—in fact, to protect experimenters rather than

¹ The humane and carefully-guarded Bill drawn up by the Royal Society for the Protection of Animals, and introduced by the Earl of Harrowby and Lord Carnarvon, was rejected.

their helpless victims. Thus, whilst in Section 2 a penalty of £100 or three months' imprisonment is imposed for acts of cruelty, the Bill proceeds in Section 3 to give absolute freedom to every licensed person to torture, to mutilate, to disease to any extent if he considers it advisable to do so. In Section 11 it gives exceedingly wide scope for procuring licenses. By Sections 7 to 10 it makes the efficient oversight of licensed persons almost impossible, and by the provisions of Sections 13 to 15 it virtually excludes the influence of growing humanitarian conscience in the community from being exerted on the persons and places licensed. In short, the Bill would rather seem to be skilfully devised to give a free hand to persons who may call themselves 'scientific' than to protect living creatures who cannot protect themselves.

The plea put forward by the gentlemen referred to—viz., that medical progress is now hindered in England by restrictions—is practically a justification by them of the inhuman practices which prevail in France, Germany, Russia, and the United States, and in all countries where the conscience of the people has not been aroused to the moral and intellectual dangers involved in the torture of animals.¹

¹ The judicious remarks of Lord Farrer in relation to municipal affairs apply equally to the subject under consideration. He says: 'My immediate object, however, is not to preach upon the general question, but to make a practical suggestion. What we want to know is, Which of the two ways of doing any particular work is the cheaper and better? Much experience

Surely these English physicians who demand entire freedom for vivisection do not realize what the result of foreign methods is. They cannot have noted the innumerable examples of atrocious cruelty which are occurring in the records of medical research as practised on the Continent and in America.

They cannot have taken note of such typical examples as the utterly useless barbarity of Senn of Philadelphia, setting fire to a dog that he had pumped full of hydrogen gas, before the Medical Congress of Berlin in 1890. Nor the experiments in massage on a series of large di jointed dogs performed in Professor Charles Richet's Paris laboratory, not only with the permission, but with the consultative advice of that gentleman. A set of more unjustifiable experiments were never devised.

Certainly, no body of honourable English physicians who are in the habit of reading *Les Archives Générales de Médecine* would fail to condemn such fallacious experiments, where the pretence of anæsthesia served to diminish the resistance of the victims—not to annihilate pain.

Factors in Human Nature.—It must never be

of public departments leads me to doubt their own reports upon their own doings ; not, of course, from any dishonesty on the part of the officials, but from a natural tendency in every man to make the best of what he does. It is for this reason, as well as from want of sufficient experience, that I cannot feel absolute confidence in the reports made to the London County Council on the results of their own experiments.'

forgotten that gambling excitement or the spirit of undue emulation exists in all classes of men—in biological investigators as well as others—and it needs guidance or restraint.

The German officer Reizenstein felt keen remorse for the murder of his beautiful Irish mare Lippe-springe, yet he and his companions tortured thirty horses to death under the temporary insanity of intense rivalry. But it was possible to bring public conscience to bear on this barbarity, and thus check the recurrence of any similar future aberration.

So in biological research we see the disastrous effects of individual and national rivalry. They are shown in the contradictory results of false methods of observation, in the endless repetition of similar painful experiments, in the strife of conflicting theories, and in the practical failure of results obtained from the lower animals when applied to the human race.

The moral sense of a noble profession may well be appealed to to create a conscience which shall check the present grave abuses of so-called research.

CHAPTER VII

Prurigo Secandi

ANOTHER serious ethical danger connected with unrestrained experiment on the lower animals is the enormous increase of audacious human surgery, which tends to overpower the slower but more natural methods of medical art and to divert attention from hygiene.

This modern increase of surgery, entailing permanent mutilation, has received a special name, *prurigo secandi*, or *cacoethes secandi*. It prevails in France and in every country where no restraint is placed on animal experimentation,¹ or where the

¹ 'Professor Leon le Fort, Professor Verneuil, Professor Duplay, and Professor Tillaux, have been asked by a public journal for their opinions on the operative mania (*furie opératoire*) said to be prevalent at present. Professor le Fort says it is much more widespread in France than in other countries, and in a long letter he protests against the custom amongst the young French surgeons, in order to bring their names before the public, "to seek out some operation unknown in France, then seek out a victim on whom they can perform it, in order to report it before a medical society, and perhaps also show the patient." Then, says M. le Fort, they take up the operation as

importance of not injuring the moral sense of students has not been recognised.

The great increase in ovariectomy, and its extension to the insane is a notable result of this prurigo secandi.

Dr. Chanu, in his carefully-prepared thesis of 1896, in exposing the grave abuse of this branch of surgery, estimates that there were 500,000 castrated women in France, and one in every 250 women throughout Europe. He finds the decrease of the birth-rate to coincide with the abuse of ovariectomy. 'Dr. Chanu affirmed, before a jury unable to refute his assertion, that the abuse of ovariectomy has done more harm to France in ten years than the Prussian bullets did in 1870, and that the causes of the depopulation of France are closely allied to the practice of the castration of women.'

The prevention of disease in the organs of generation must be sought for persistently in improved education of the young—the male as well as the female—and in *just* relations of the sexes.

Of the same nature as the prurigo secandi of medical practice is the motive or source of much of the laboratory experimentation.

a speciality, perform it on 100 or 200 patients, and thus gain a reputation. Professor Verneuil protests against the abuse of operations in general, and especially of gynaecological operations. He deplores the prurigo secandi with which so many of the French surgeons are attacked. Professor Duplay and Professor Tillaux express the same opinions.' See *Medical Reprints*, May, 1893.

The various ethical dangers resulting from conscienceless or irrational experiments on animals demand much more serious consideration by the profession than has hitherto been given to them. In the opinion of an increasing number of intelligent physicians, a vast amount of what is now presumptuously called research—experiments disguised under learned names, but which are really the irrational mutilating and diseasing of sentient living creatures—are no more *scientific* research than is the gratification of a child's curiosity when it sticks a pin with a thread through a cockchafer, to see how long it will fly and how loud it will buzz. The child, when punished for its thoughtless cruelty, might remonstrate in learned terms that it should not be restrained, for it was investigating the vital endurance of the *Melolontha vulgaris* and the acoustic properties of its wing-covers, under interesting and abnormal conditions.

A large proportion of what is simply conscienceless curiosity, often starting from more or less frivolous tentative diversions of the laboratory, though now by courtesy named research, is no more valuable than the child's spinning of the cockchafer, and should be as sharply checked.

The genesis of discovery in biology, with its necessary relations to therapeutics, has yet to be written. Extending experience is more and more clearly showing us, as a practical fact, that whilst observation and rational—*i.e.*, humanely limited—experiment are legitimate and noble efforts for the

attainment of improved medicine, cruel and merely curious experiment, condemned by our moral faculties, are misleading and mischievous.

Men like Professor Henschel, of Upsala, and Professor Pettenkofer, of Munich, warn our eager young investigators against drawing conclusions as to human beings from experiments made on animals.

We find, as a matter of fact, that all the *permanent* advances of medicine have been gained whilst pursuing rational and righteous methods, whilst all the fiascoes of supposed discovery have resulted through departing from them.

And *antiseptics*, and sanitation are not the result of experimentation.

Danger of inoculation.—The most serious fallacy arising from erroneous methods of biological research is the practice of vitiating human blood by the introduction of the diseased products of animals. This dangerous method, which threatens to undermine national health, is the necessary outcome of diseasing animals on the plea of seeking remedies for human disease.

The intellectual fallacy involved in this practice will be considered later; but its ethical character as affecting conscience must here be noted, as it is this line of research which is productive of the most extended form of cruelty to the lower animals—viz., *slow torture*.

The following extract from records of the Belgian Academy of Medicine illustrates this subject:

'Researches on the inoculability of cancer ought to be encouraged. The numerous experiments made on animals are still contradictory in results. Drs. Francotte and De Rector have in the years 1891-92 inoculated mice under the skin of the shoulder. The inoculations were carried on from June, 1891, to May, 1892, when the following appearances were presented: The whole region of the shoulder was inflamed; there was necrosis of the corresponding upper extremity, which dropped off from dry gangrene; the stump left was indurated, hard, and painful, whilst the lymphatic glands in connection with the part were enlarged. The examination of the tumour disclosed nothing very particular. The bones were the seat of osteoporosis, and the arteries showed arteritis. The investigators believe the tumours were cancerous, but this statement must be received with caution.'

Such long-continued torture, even of a mouse, is morally degrading, and, as if in retribution, is doomed to be useless.

A Chinese medical author, Tuan Mei, writing in the last century, 1716 to 1797, lays down a true medical axiom when he marks the difference between death and torture as follows: 'Living creatures are for our use, and we may put them to death. But we may not make death a boon, and then withhold it from them.'

CHAPTER VIII

What is Scientific Research?

THE apparent opposition between popular and medical judgment in relation to certain methods of biological research which claim to be scientific, necessitates a clearer knowledge of what science is, and a recognition of the methods of research which can alone be called scientific.

It is certain that knowledge of truth must reconcile varying but honest opinions, and furnish plans of investigation that neither shock the humane development of our nature nor hinder our intellectual progress towards truth.

The terms 'science' and 'scientific' are constantly used and abused. They are often applied to the accumulating of facts or of phenomena; but such accumulation is not necessarily science, and may even hinder science. For although the collecting of facts may bring together valuable materials essential for future use, it may also bring together rotten or sham materials, which will interfere with sound work. A faulty method of endeavouring to

obtain facts may seriously destroy the value of the phenomena thus observed.

The gratification simply of intellectual activity or curiosity must not be confounded with genuine research. Curiosity is the outcome of ignorance. Now, our ignorance of much in Nature is no reproach to anyone, but the way in which curiosity is gratified marks the difference between the simple child and the rational adult. In the childish development curiosity, though useful, is superficial and short-sighted; it is necessarily a shallow impulse, which cannot realize the wide relations of existence, and its satisfaction has no necessary connection with the acquisition of valuable knowledge. But the adult rises into a higher plane of thought. Curiosity is no longer unduly exercised, but has grown into a love of truth. It has become that reverential use of reason which is the basis of truth, and which forms the true guide to the attainment of scientific knowledge; for rational method does not isolate a fact from all its connections, but sees it in its relations and in due proportion. Thus only can valuable knowledge be acquired.

Neither is analysis science. It is only when the observations of analysis are corrected and proved by synthesis that the truth of science can be obtained.

A clear recognition of the different use of analysis and of synthesis is essential in any claim of research to be called scientific. 'Although by analysis we separate and by synthesis we combine, yet in the

synthesis there is more than in all the parts taken analytically. The mere synthesis introduces something entirely new.'

Kant, in speaking of the use of analysis and synthesis in logic, lays down the test of all scientific inquiry. He says: 'Analysis is the first and chief requirement in making our knowledge distinct. For the more distinct our knowledge of a thing is, the stronger and more effective it can be; only the analysis must not go so far that at last the object itself disappears.'

Truth being a unity, the science which demonstrates it must correlate all knowledge.

Science is not, therefore, an accumulation of isolated facts, or of facts torn from their natural relations. To know a thing scientifically is to know it in just relation to all other things. For science unites and demands the exercise of our various faculties as well as of our senses.

Science is proved knowledge. It is the study of causes and their relations applied to facts; but such proof can only be obtained by search which is in accordance with the laws of Nature—laws which are gradually discovered by our race.

Natural law is deduced from all the facts of human experience, in searching for and collecting which we must recognise the conditions under which we are placed, the limitations of the present phase of our intellectual powers, the gradual growth of conscience.

Science being proved truth, scientific method

requires that all the factors which concern the subject of research shall be duly considered, in order to arrive at correct thought respecting the special subject of inquiry.

The application of scientific method necessarily varies, therefore, according to the subject under investigation.

Thus, the construction of a bridge and the calculation of an eclipse equally involve the bases of scientific method—viz., observation, deduction, and experiment; but each subject requires a special application of scientific method, suited to the varying nature of the subject of study.

Consequently, biological research, in order to be scientific, requires a special modification of method, because the new factors of sensation and consciousness come into play in biology—factors which do not exist in astronomy, or geology, in mechanics, physics, or chemistry.

In order to attain truth respecting biology, therefore, the facts concerning sensation and consciousness and their relation with, or the way in which these new factors modify the facts of, physics and chemistry must be carefully considered in this higher state which we call life, or the investigation is not scientific, no matter how interesting as an intellectual exercise.

When first endeavouring to find a recognised definition of the term 'science,' I consulted the latest *Encyclopædia Britannica* of our public library, thinking that from such an acknowledged authority a

correct statement could there be obtained. To my surprise, I found that the word 'science' was not included in the list of subjects. Searching further in this record of nineteenth-century thought, under the heading of 'Biology'—that department which is ordinarily supposed to be the science of life as distinguished from the consideration of non-living things—the following principle was found to be laid down—viz., that there was no essential difference between organized and unorganized Nature, for life was simply a property of matter.

It is well to weigh the argument for this doctrine, which necessarily destroys the essential idea of right and wrong, and removes the foundation of good and evil. It is set forth in the following manner:

'The abstract-concrete sciences are mechanics, physics, chemistry. . . . Whilst their subject-matter is found in a consideration of varied concrete phenomena, they do not aim at a determination of certain "abstract" quantitative relations and sequences known as "laws," which never are manifested in a pure form, but always are inferred by observation and experiment upon complex phenomena, in which the abstract laws are disguised by their simultaneous interaction. . . . These sciences of mechanics, physics, and chemistry have for their object to explain concrete phenomena by reference to the properties of matter set forth in their generalizations.'

The following important dictum in regard to biology is thus laid down:

'It is the business of those occupied with that branch to assign living things in all their variety to the one set of forces recognised by the physicist and chemist . . . and its evolution' (that is, the evolution of life) 'as the necessary outcome of those forces—the automatic product of those same forces. . . . The discovery of the mechanical principle of evolution completed the doctrine' (of the material origin of life). ' . . . It may be said to comprise the history of man, sociology, and psychology—viz., the survival of the fittest in the struggle for existence.'

This ignoring by the *Encyclopædia Britannica* of any definition of the word 'science,' and also the attempted reduction of life to a property of matter, is, however, too limited a view of Nature to be accepted by many thoughtful students of the present day. Turning, therefore, to *Chambers' Cyclopædia*, which is the latest expression of the views of the able thinkers of North Britain, an explanation of the term 'science' was found, which is far truer to advancing thought. The comprehensive definition is there given that science 'is the correlation of all knowledge.'

As science searches for causes with their relations, and is proved knowledge, so no branch of knowledge or method of acquiring knowledge can be considered scientific which contradicts any facts of Nature, or which bases its methods on the destruction of those facts.

Truth can only be arrived at by considering

various or apparently opposite aspects of human problems; so biological facts, or the problems of organized or living creatures must be considered, not simply from the side of 'mechanics, physics, and chemistry, or the automatic action of the forces of matter,' but also from the equally positive facts of life, and the forces which careful observation is gradually showing to be enfolded in the fact of mind as developed through protoplasm onward. The facts of affection, companionship, sympathy, justice, are positive forces. They exercise a powerful influence over the physical organization of all living creatures.

These mental forces can change the action of the bodily functions in the most surprising manner, arresting the heart's action, interfering with secretion, or changing natural secretion into poison, and destroying the normal and beneficial controlling action of the nervous system. They are proved by experience to be so striking that they cannot be overlooked in any unprejudiced investigation of natural forces.

A fit of passion in a nursing mother has destroyed her infant; the industrious cultivator seeing his field of strawberries, the products of his toil, carried off by thieves, has fallen dead in his vain efforts to stop the cruel depredation. But such instances are world-wide, and corroborated by everyone's experience. They prove that, although the forces of mechanics, physics, and chemistry are employed in the animal economy, there are also powers far

beyond these limited forces, which must be studied also in biological research, if we are to learn how these physical may be overridden by mental forces. Without such correlation of knowledge we fail to realize the unity of Nature, and cannot attain to true science or proved knowledge.

It is thus seen that, as already stated, in useful scientific investigation the object to be attained, the method to be employed, and the application to be made of the knowledge searched for, must all be considered in determining the distinction between genuine science and simple unguided intellectual activity or curiosity.

It is necessary to emphasize the fact, because this vital distinction is often overlooked in the claim now made for the grand term 'science.'

In defining the meaning and scope of science as pursued by rational beings, it must be recognised as a fundamental principle, which cannot be too often dwelt upon, that what we can do, is not a measure of what we ought to do. Thus, when Stanley attempted to excuse the infamous action of his naturalist, Jameson,¹ by saying that he was a real good fellow, but 'his science misled him,' he degraded the term 'science' by applying it to an act of morbid curiosity.

Again, when the Russian nobleman purchased a child and condemned it to be brought up with a

¹ This naturalist, when amongst cannibals in the Emin Pasha Expedition, bribed the cannibal tribe to eat a young negro girl.

deaf and dumb nurse, under the unnatural condition of deprivation of all social relations, his action was not scientific, but a gratification of inhuman curiosity.

It is within our power apparently to drown an animal, human or brute, and recover it to life again and again, but we gain no scientific knowledge by so doing. We torture the creature and violate our natural instincts, but we acquire no practical benefit to human welfare; on the contrary, we endanger the mental integrity of the experimenter.

It is a short-sighted and hopeless attempt to do violence to Nature in a search for scientific truth. Distinction must be made between the possible and impossible in the conditions under which we are placed in life. Thus, we cannot destroy the family relation, but we can make it happy and conducive to the welfare of the race. We cannot change the method of human generation, but we can spiritualize its exercise. We cannot destroy the instinct of private property, but we can guide and limit it. We cannot change structure, but we can educate it; nor abolish curiosity, but we can restrain and direct it; nor check invention, but it need not be applied to evil purposes. Neither can we make races equal, but we can establish justice and mercy in the relations of the stronger to the weaker.

This study of the natural laws which necessarily limit rational human action applies with especial force to biological research, and explains the reason for limiting scientific method.

Thus, the study of living creatures under unnatural or destructive conditions, although it may be a well-meaning attempt to acquire knowledge, is, nevertheless, a dangerous one. It is intellectually a false method which may lead to practical error, and produce a labyrinth of confusion and contradictory experience which hinders the attainment of exact knowledge. It is morally a false method, because it injures those elementary instincts of justice and mercy by whose evolution civilization advances. Thus the progress of the race is retarded.

The present astounding multiplication of drugs, of inoculations, of mutilations in the practice of medicine, with the eager attempt to prove each new invention by a formidable array of imperfect statistics, is a striking object lesson in the present day of the error into which false methods of research have led many members of a noble and humane profession. It is a fallacy necessarily proceeding from a wrong view of what science really is.

Although this erroneousness is by no means solely connected with vivisectional methods, yet if the high claim which the noble art of medicine makes to advance our social well-being be justly founded, a stringent obligation rests upon it not to injure the moral sense of its members by the methods employed in education or in practice.

CHAPTER IX

The Axiom of Science

THE fundamental law, without whose observance reliable biological investigation is impossible, is stated as follows :

‘In studying the laws alike of organic and of inorganic Nature, the experimenter must be careful not to destroy the phenomenon that is being investigated.’

Intellectual error, as well as practical danger, arises from the attempt to transfer to man results supposed to be gained by fallacious experimentation on the lower animals. The fallacy consists in noting general resemblance of structure, but not the far more remarkable differences of function. If, for instance, the life habits of two dogs of good breed are closely studied, it will be seen that, although certain individual differences are observed between the dogs, yet they are as nothing when compared with the enormous variation of function between the dog and the human being. The bones and garbage swallowed without injury, and the licking of its body, show the different type of digestion and

assimilation, the action of the kidneys, of the various senses, and the possession of senses which we are unable to appreciate ; in short, its distinctive type of existence proves the impossibility of drawing safe inferences for man from the digestive or other canine functions. Again, observation and rational experiment, solely for the benefit of one species of animal, may incidentally lead to the benefit of other races of animals, but direct experiment on one type for the supposed benefit of another kind is unscientific.

It is this error that vitiates the famous postulates of Professor Koch, through the system of 'controls,' the latest exemplification of this fallacy being the attempt to prove the existence of cholera in man by cultivating the bacilli in animals. The same error also produces the failure of M. Pasteur to prevent hydrophobia in man.

It is well known how the influence of what we term 'mind' governs the action of the bodily functions, either promoting or disturbing their normal condition. This is a fact of growing importance in practical medicine. Similar influence is exerted in varying degrees on all living creatures. Destructive or non-natural experimentation on living animals is always subject to the fallacy of morbid condition.

The established law of research stated above exposes the error of pursuing biological investigation (or the study of vital action) by the process of mutilating or diseasing living animals.

In research the radical difference between inorganic and organic Nature cannot be too clearly insisted on. Whilst in the former we can resolve compounds into their elements and recombine them, such process is impossible in organic Nature. We can take a steam-engine or a watch to pieces, examine their parts, repair them, and put them together again, thus proving our knowledge in this realm of Nature. But a living thing cannot be treated in the same way. Not only the difference of animal type forbids destructive method of investigation, but as the type rises in the scale of creation the growing fact of individual idiosyncrasy increases the uncertainty of erroneous method.

Therefore the law of scientific research, which forbids the destruction of phenomena to be studied, is profoundly true.

If this law be not observed, intellectual activity may be gratified, self-conceit or love of novelty and excitement may be pandered to, the panic of fear in human beings may be worked upon, but the attainment of scientific truth in biology will be impossible.

It is thus seen that methods of biological research which involve cruel or destructive experimentation are both ethically unjustifiable and intellectually fallacious. They are unscientific methods which will inevitably be abandoned as we attain to clearer views of that unity of truth in which the reconciliation of human conscience with intellectual activity becomes alone recognised as science.

CHAPTER X

Rational Experiment in Research

As an illustration of legitimate and even heroic experiment, the trial made with cholera bacilli by Dr. Von Pettenkofer of Munich on himself during the cholera epidemic of 1891 deserves permanent record.¹ It is of importance as showing the fallacy that may be involved in the exaggerated search for bacilli, as the chief cause of disease, which is the favourite theory and practice of the present day.

Dr. Von Pettenkofer (in opposition to the common medical belief) asserts that the diffusion of the cholera germ or cholera bacillus is not the chief cause of cholera. He states that there are two

¹ The entirely negative results of all experiments made upon the lower animals to determine if cholera is communicable, or where the poison resides, is demonstrated by an endless series of experiments on the lower animals made in many countries. The extent and severity of these experiments, as well as their inconclusiveness, is impartially detailed in the classic work of Hirsch, *Handbook of Geographical and Historical Pathology*, vol. i., pp. 476-480.

other absolutely necessary conditions, without which no outbreak of cholera is possible, and if these conditions are not present, the cholera germ may be breathed with no production of cholera.

The first condition is the unhealthy state of the soil or locality. But even this does not produce an outbreak if the second condition does not exist—viz., individual predisposition; and he shows that neither the cholera germ nor the insanitary locality, nor both combined, will produce cholera if this individual predisposition does not exist. He further states that no experiments upon the lower animals can be relied on; the only *proof* in relation to cholera must be from the experience of human beings.

Dr. Von Pettenkofer proceeded to experiment on himself, choosing Munich, in daily communion with Hamburg (where the epidemic was raging), as the place of operations, and sent to Hamburg for the cholera germs. On October 7 he swallowed a centimetre of fresh cholera culture, in the presence of witnesses—*i.e.*, infinitely more than could be taken in by touching the lips with contaminated fingers, a cubic centimetre of culture being calculated as containing a thousand million microbes. He in no way changed his manner of living, eating accustomed food, including fruit, cucumbers, and other forbidden articles of diet. During the following week his physiological condition, pulse, temperature, etc., were carefully noted. Nothing unusual occurred but a little internal rumbling and slight diarrhoea,

which passed away of itself. Two skilled bacteriologists, MM. Peiffer and Emerich, carefully examined the secretions during this experiment.

M. Von Pettenkofer himself thus states the results :

‘The comma bacilli not only prospered in my digestive tube, but had so multiplied in it that it was evident they found a congenial soil. They were found there in quantities, and in a state of pure culture. But on October 14 all the secretions were normal, only containing a few isolated microbes, which had entirely disappeared on the 18th.

‘Now, most bacteriologists assert that the cholera bacilli remaining in the intestines secrete there a poison, which, being absorbed, produces the cholera. But what a quantity of poison must have been secreted by these milliards of bacilli during the eight days’ sojourn in my intestines! Yet I felt perfectly well, had an excellent appetite, felt neither indigestion nor fever, etc., and I attended every day to my usual occupations. Whence I conclude that the comma bacillus, though it may cause a little diarrhoea, produces neither European nor Asiatic cholera.

‘Now, it must not be imagined that I am the adversary of the cholera bacillus; but it is erroneous to suppose that when a specific microbe has been discovered in the secretions of an infectious disease that the means of fighting it has also been discovered. The discovery of the bacillus of consumption was just as interesting as the discovery of the

cholera bacillus, but since its discovery phthisis has destroyed neither one man less nor one man more.

'These (bacteriological) methods for protection against cholera rest purely upon theory, and it seems to be thought that henceforth cholera, etc., ought to behave according to the prevalent theory, instead of theory being modified according to the cholera. Instead of trying to catch the comma bacillus and draw a cordon around it, the essential thing is to make all the dwelling-places of man healthy.'

Such is the vigorous and genuinely scientific experiment of a distinguished medical investigator.

Other experimenters have confirmed Dr. Von Pettenkofer's observations. On October 17 Dr. Emerich made a similar experiment on himself, with like results.

Since then, experiments have been made in the Vienna Pathological Institute, with the following results: Six persons partook of the comma bacillus in no mean quantity, and not one of them has had the disease. The six are two doctors, the servant of the Institute, two medical students, and a private gentleman. Professor Stricker treated them all. Two did not feel their health impaired at all; one had headache, was slightly feverish, and could not sleep; two had slight attacks of diarrhoea; and only one was really ill, but recovered at the end of a week. These experiments inspire medical men with serious misgivings as to the theory which

considers the comma bacillus as the cause of all cholera.

The supremacy of sanitation is the lesson which is being gradually taught by such humane scientific experiments. Dirt in its largest sense, as matter in the wrong place, whether in air, water, food, clothing, habitation, soil, or contact, is undoubtedly a main physical cause of disease.

But in all epidemic disease the emotion of fear must be recognised as a most potent predisposing cause. The great fact of mind or emotion is a powerful influence in producing, in preventing, or in curing disease.

This psychological side of medicine is only beginning to receive due attention. As the fallacies which arise in animal experimentation from the production of fear, pain, and coma have not yet been fully recognised, so the inevitable influence of mind in modifying physical conditions has never yet been studied scientifically in human medicine. Yet facts exist in unsuspected abundance which need to be collected, verified, tabulated, and their laws of action diligently studied.

It is known that even that strong muscle the heart may be ruptured by the agony of intense emotion. At Blackburn the daughter of a woman charged with theft became dumb with horror at her mother's sudden arrest. Hydrophobia, cholera, and even small-pox, appear to have been caused by fear.

The extent to which even the so-called microbes

of infectious diseases may be produced by fear acting on idiosyncrasy demands very serious investigation; for as it is now generally conceded that morbid micro-organisms do not exist *ab æterno*, it is essential to know by what unhealthy conditions the micro-organisms, or living particles that always surround us, become disease germs.

One of our most distinguished London physicians has full records of the following noteworthy case, which is given, not as scientifically proved, but as indicating a line of research which it is folly to ignore or refuse to investigate.

This gentleman attended a patient some years ago in an attack of confluent small-pox under these remarkable circumstances: This patient had always exhibited a morbid horror of the disease, refusing to hear anything about it or to allow it to be referred to in his presence. A friend on one occasion brought a very fine collection of anatomical plates to show him, sent over from France. Amongst them was a representation of confluent small-pox in a woman. No sooner had this gentleman beheld it than he cried, 'Take it away! I cannot look at it; it makes me ill!' The next day his son sent for the doctor to see his father, who had felt unwell ever since the shock of seeing the pathological plate. He was found suffering from the first symptoms of an illness which proved to be an attack of confluent small-pox. The most searching inquiry failed to discover any traces of the disease, either in the neighbourhood or in any connection whatever with

the patient. The cause of this illness, one of the most severe cases the doctor had ever met with, remained a mystery.

It has become of vital importance to investigate 'how far the mental attitude determines or permits the onset of infectious disease.'

CHAPTER XI

The Range of Painless Research

‘ I AM content to let Nature do all the torturing and man all the relieving . . . the grandest physiology and physiological discovery could exist outside every shade of painful experiment.’¹

These are the words of one of our wisest physicians, deliberately written in the full maturity of a life devoted to original research and its practical application to medicine. His experience led him to the recognition of this great truth : that the supreme aim of the medical profession must become more and more the advancement of sanitation. In any comprehensive view of medical art as a science the cure of disease is rationally secondary to its prevention.

This, notwithstanding the trade exigencies of competitive living, is recognised by the established rule of the profession—that the physician’s first duty is not to injure his patient.

Sanitation necessarily takes into consideration all

¹ Sir B. W. Richardson, *Biological Experimentation: its Function and Limits*, pp. 92, 93.

the elements, both mental and physical, our complex nature.

It is by the investigation of the laws of healthy created life and their practical application that progress in medicine must be looked for. By observing 'scientifically' the method and variations of these laws we shall approach nearer to the understanding of 'vital force.'

An immense range of biological inquiry urgently invites the genius of those who are gifted with the rare power of original research.

This range is practically unlimited. The collection of all useful or suggestive facts gathered by genuinely scientific methods from the enormous accumulations to be found in our Government reports, in the records of our medical periodic literature, in the observations of hospitals, societies, clinics, and private practice, would, if properly arranged and tabulated, form a most useful branch of such a centre. If such collection and examination were extended to the records of other countries, the value as well as labour of the work would be greatly increased.

The observation of the dietetic and hygienic as well as medical treatment of disease, including climate, soil, atmospheric conditions, the distribution of disease, the effect of occupations, prenatal influences, and later training, are essential.

The action of mineral waters, of compressed and medicated air, the hydration of tissues, the conversion of vegetable into animal tissue, the action of

the various constituents of the human body as curative of disease, present necessary subjects of investigation.

A careful judicial inquiry into the claims of specific cures, where a sufficient case for investigation is presented (as *Echinacea angustifolia* in snake-bite, also the Russian bath as preventive of hydrophobia), would form another valuable department.

In fact, it is impossible to specify the full range of important subjects which demand the devotion of able and painstaking research, working upon the careful study of each type of life for the benefit and improvement of that type.

In no branch of this wide range of inquiry is painful experiment necessary.

Our homes, our industrial occupations, our legislative enactments, should all be guided by hygienic knowledge, and its diffusion should be actively encouraged by the community. Our hospitals and dispensaries need to promote practical hygiene. Our medical schools should turn the force of their learning, ability, and great influence to the conversion of their students into a vast body of sanitary missionaries. If our thousands of medical graduates turned out every year into practice could go forth inspired with enthusiasm for health, convinced that the preservation of health was their especial work, and that all disease must be regarded as a violation of the laws of health, a violation which it was their special duty to fight against, a mighty step in the advancement of medicine would be taken. The

impulse to such progress should come from improved instruction in our medical schools, and in the management of our hospitals.

We much need also an unprejudiced and exhaustive history of the progress of biological inquiry since the Middle Ages, with its present result in therapeutics. Such a history may be expected to confirm the not unfounded opinion that the most important advances in practical medicine have been made by methods which are not in any way at variance with our natural instincts of justice and mercy.

CHAPTER XII

Recapitulation of Principles

I. THE attainment of truth, not the gratification of curiosity or of personal ends, is the sole and distinctive aim of genuine scientific research.

II. It is a radical intellectual error to apply the same methods of investigation, suitable to inorganic facts, to the study of organic facts. Natural law being mind ruling matter, every method employed in research into organic Nature must respect and take into account the inseparable mental factor in each type of sentient life, or it becomes unscientific, and may promote fallacy, not truth. Destructive experiment on living creatures, even under the partial suspension of consciousness produced by anæsthetics, is an erroneous method, producing confused or contradictory results.

III. Scientific research in biology must be based upon close and extensive observation of the varying forms of animal life, under natural conditions, with post-mortem examination of the records left by health and disease. Experiments, whether for the

repair of lesions or the cure of disease, can only become scientific when made upon the type of life to be benefited by the experiment.

IV. Any experimentation which creates involuntary suffering in living creatures vitiates the necessary conditions of scientific research, and tends to degrade human conscience by producing indifference to suffering.

V. In training our future practitioners of the healing art, the cultivation of respect for life and the strengthening of enlightened sympathetic conscience in dealing with all poor or helpless creatures are of paramount importance. The present system of medical education requires revision in order to make health, not disease, the central subject of study.

Finally, full and generous encouragement to those who are engaged in important painless research is urgently needed. Such research should be carried on, if possible, in connection with the great body of serious scientific investigations, by persons of proved ability and clear moral sense, and the work should be cordially open to the observation of all earnest friends.

Such research, reconciling by right methods of investigation intellectual activity with human conscience, would increase our knowledge and advance our well-being in accordance with the higher reason of the race. Only when thus guided by intelligence and conscience can biological research deserve the noble name of science.

It is by the recognition of this true method of biological research and by the generous support of physiologists who honestly seek for truth, even when opposed by temporary fashions of medical opinion, that medicine will become a science.

CHRISTIAN SOCIALISM

THOUGHTS SUGGESTED BY THE EASTER SEASON

1882

CHRISTIAN SOCIALISM

ABOUT thirty years ago a little band of ardent and earnest men joined themselves together as Christian Socialists, under the guidance of the Rev. F. Maurice, Rev. Chas. Kingsley, and other able and hopeful leaders. They shared in a high degree that ardent desire after 'Practical Christianity'—that embodiment in every act of daily life of the spirit of our Master's teachings—which has always existed in the Christian Church, and which can only cease with the disappearance of the Christian faith.

The grand idea of human brotherhood is a vital principle of our Lord's teaching. It is the foundation on which He builds His Church. But practical Christianity cannot exist unless political and social economy are founded upon this principle of brotherhood. Trade and manufactures, agriculture and education, national government and the individual home, are not Christian unless they are inspired by this central principle, laid down by our Divine Master, and reiterated in every page of His wonderful life—viz., that we must live as brethren under the inspiration of a wise and loving Father.

Attempts to realize more fully this fundamental portion of the Christian faith, by special associated efforts, have always been observed in every age. From those early times when the disciples laid their offerings at the Apostles' feet, and strove to 'have all things in common,' to the present day, the attempt to secure higher ends by the power of combination—a combination inspired by the highest idea of right—is always going on.

Christian Socialism, therefore, is no new idea. It is as old as our faith. It is the shaping of actual daily life on the principle of Christian brotherhood. It enters in some degree into every association—church, chapel, or society of any kind whatsoever—which seeks to embody an unselfish or a higher spiritual idea; but the Christian Socialist believes that the structure of society in every part should be moulded by the idea of united interests.

The very gradual acquisition of wisdom by our race, however (a slowness which seems to be the necessary condition for securing both freedom and strength), leads to the frequent exercise of zeal without knowledge. Direct attempts to join people together under better conditions than the haphazard methods by which villages swell into towns have frequently ended in failure.

But each successive generation enters upon active life with increased intellectual development and with increased command over material forces. It equal enlargement of the moral nature accompanies the growth of intelligence, then the generation has

made a solid advance in wisdom, and the practical Christianity of true brotherhood is nearer at hand. The Christian Socialist believes that many principles on which a better society must be founded have come into clearer light during the past thirty years, and have been, and are being, tested by varied and valuable experiment.

The term Christian is here used in a legitimate practical sense. Reverently and heartily a Christian must accept the rule and guide of life so emphatically laid down by our Master—viz., that in eating and drinking, in buying and selling, at home and abroad, we are to act for our brethren, not for ourselves alone. We are to seek, first of all, righteousness.

The problem we have to face is the ever-increasing amount and variety of evils which we see around us, and to ascertain how far this is caused by the present selfish structure of society, by the false individualism which hypocritically asks, 'Am I my brother's keeper?' Evils now increase upon us more rapidly than we can remove them. Pauperism and vice, drunkenness and crime, mammon worship and frivolity, dishonesty and corruption, are all bred by ourselves. They are largely produced by the conditions of the society into which children are born, and by which they are moulded. Ten years of squalor or degrading conditions may deteriorate or ruin the nature of the child. My attention was once called to a bright and charming little girl, brought to a public institution by a poor mother fallen into sickness and poverty. One year was

given to the mother to reclaim her child. On a subsequent visit, after eighteen months' interval, I failed to recognise that child; her brightness was gone, her movements had grown listless and awkward, her intelligence was dulled, her expression vacant, she was sinking with frightful rapidity into the hopeless pauper.

How pitiful are the results of our penitentiaries and reformatories, of our workhouses, orphan asylums, and industrial schools, of all the various charities by which we painfully and vainly try to mop up evil and misery, or to sweep it out of our sight. The recipients of punishment or care, when released, in the large majority of cases, fall back again into the crime, temptation, and evil from which they had been taken, and the flood of ruffianism and vice rises ever higher.

In the hard and crushing strife for decent living in which the great mass of our population are entangled, health is injured, hope dies out, and the gas-lighted gin-shop is the solace, as the dreary workhouse is the refuge of those who have ceased to hope. Yet the great mass of these persons have tried to do honest work. They have once hoped to support wife and children as an honest man should do. How is it that capital and labour have failed to come together in such a way that every willing worker can secure a comfortable livelihood, that every honest man can bring up his family in health and virtue? The relation of capital to labour is a vital question of practical Christianity.

Consider also the great agrarian fight always going on to some extent and periodically breaking out in revolution and outrage. Why is it that the great bulk of English men and women are divorced from the soil? Why are they always crowding into towns, whilst the precious natural heritage of land is so often wasted and going out of cultivation? Health and happiness should be found in country life. Such a life should not be one of dreariness and ennui, or of hopeless drudgery. There is no life so suitable for the healthy development of childhood as a country life, with natural home influences. The care of animals, the cultivation and observation of natural objects, the pure air and abundant exercise which can be enjoyed, mark the country as the natural home of childhood. Again, the production in perfection and abundance of all the articles which naturally belong to various soils is a primary need of healthy national growth. The conditions under which such cultivation can be best carried on, with the kind and proportion of manufactures which might advantageously spring up in connection with it, affect the very structure of society. They provide the necessary material and social conditions which furnish the possibility and favouring of a religious life, or which create serious obstacles to such a life.

The relation of the people to the soil of their native land is a very serious question of practical Christianity.

Again, in what manner is the education of the

various classes of our children carried on ? Consider the education given to the boys of the aristocracy and upper classes. What chance have these lads of growing into a sense of Christian brotherhood ? They are fawned upon from babyhood ; initiated at school into the most heathen vices ; corrupted by luxury, taught that money can do everything, that rank will be servilely worshipped. How can these poor lads become the large-hearted leaders of a society founded on the Great Master's teaching of brotherhood ? The character of education does not depend only on the more or less wise oversight and arrangements of the schoolmaster, but still more on the constant influences of the life in which the child grows up. Trace the various stages of education downwards, through all classes of the community, to the enormous mass of little boys and girls trained from babyhood into vice and ruffianism, and we see that education is a vital subject of practical Christianity.

Consider next the relations of the sexes. This subject is the fundamental question of society, for the element of society is the man, woman, and child, not the individual. How do our laws and customs inculcate manly honour, womanly dignity—in short, Christian life ? Carefully studying this subject in its widespread ramifications, it is seen to be the deepest question of human brotherhood—*i.e.*, of practical Christianity.

When, proceeding from more private to public affairs, we examine the modifications or arrange-

ments of municipal institutions which have arisen in our towns, the examination is not encouraging. It is the heathen, not the Christian, principle which is chiefly exemplified. It is self intensified. The new power created throws off a sense of responsibility to those who create it. No enlarged sense of duty springs from the trust that is thus given to individuals; but petty cabals and bickerings arise, narrow party views are fostered, selfish interests advanced, or a foolish air of authority is assumed. The more high-minded inhabitants shrink from entering into corrupt political contest; centralization increases as municipal control is degraded. Local and general government is too often only a parody of representative institutions. The important question arises, In what way can we who believe that public as well as private life should be guided by a religious spirit attain the end? How can we form associations and delegate necessary authority in such a way as to advance Christian, not heathen, life? In observing the effect of Law upon the education of a nation, we find that its embodiment in government forms a very important branch of practical Christianity.

When we ponder all these vital questions, and earnestly strive to put into practice the principles of action which we believe to be profoundly true, we find our Christian sense of right shocked at every turn by fixed conditions, which are the result of selfishness, not of brotherhood. The spirit of self-interest, only useful as a servant, has

usurped the false position of master. Like all our faculties, self-interest needs a higher guidance, or it degenerates into the narrowest selfishness. We have not yet learned the one grand lesson of Christianity—viz., that the largest view of self-interest can only be found in brotherhood.

The inquiry now to be made is whether any new principles of association, co-operation, combination—or by whatever name we choose to express united interests—have so grown and been proved within the last generation, that we may make successful advance on the path dimly seen by the noble men I have referred to.

There have been many failures in attempts at the realization of associated or organized life ; but there are also many and striking examples of successful, though imperfect, organization, founded either upon a religious idea or on business enterprise, or on the enthusiasm of some clever and benevolent individual. Roman Catholic, Moravian, and Shaker communities will illustrate the first series of successful organization ; joint-stock enterprises and co-operative stores the second ; Leclaire's house decorators' guild and the Familistère of Guise the third. It is through union of the forces exemplified in these three classes of association that we may attain to a nineteenth-century realization of practical Christianity in the future growth of towns or colonies.

The following are some of the chief applications of the principle of Christian brotherhood, which

we believe will remould the structure of future society :

1. The repurchase of land by Christian joint-stock companies, in order that its control and management may henceforth belong to those who live upon it and use it.

The absolute irresponsible individual possession of land becomes, as society advances, contrary to the best interests of a nation. The soil, which is limited in quantity, but indispensable to the maintenance and welfare of the people, should not be treated as an individual selfish speculation, regardless of its most advantageous use, and of the needs of those who may live upon it.

It is the slow but sure result of the irresponsible monopoly of the soil by individuals which is at the root of a great evil—viz., the unnatural and diseased growth of great unorganized or selfishly organized towns. Our towns, formerly the haphazard growth of accident, are becoming more and more the growth of selfish speculation—*i.e.*, the false organization of self-aggrandizement. The hereditary or other holder of land leases it to speculators, whose one object is to make as much pecuniary profit as possible out of the lease. This is the one point held steadily in view, often through a series of underletting, in which each fresh speculator seeks to make a new profit. Health, convenience, human welfare in its necessities and interlinkings, are never thought of, or are entirely secondary to gain. A showy neighbourhood for the rich, yielding the highest rents that

can be screwed out, and a crowded neighbourhood for the poor, with still higher proportionate rents, are created. Gardens disappear in the dreary mass of showy, badly-constructed brick-and-mortar quarters in which the young generation grows up—dreary quarters, but where rents and rates are constantly rising. This is the result of irresponsible individual ownership and perverted organization in all our rapidly-growing towns. It is a potent cause of growing immorality.

The control of land by a society or colony living upon it and using it, does not forbid the leasing of land, under wise conditions, to persons who are members of the society. It is the irresponsible individual possession of land, with the speculation which such a method of holding gives rise to, which is the principle always ultimately injurious to society.¹

2. Economy in distribution and management. A rational economy in the retail distribution of products, in the domestic arrangements of our homes, in the official management of local and general government, will set free an immense number of persons whose time is now needlessly occupied. The talent and energy of this wasted multitude should be turned to increase of production and other necessary and valuable employment, under the wise freedom of united interests.

¹ The works referring to the economic principles laid down in this paper, with the statistics and experiments which support and illustrate them, are too numerous to mention here; but they are of the utmost value to the Christian Socialist.

3. A fair share of profits to all workers. This is a most important principle, which can only be solved under the guidance of Christian brotherhood. In the increased production which will result from wise economy in distribution, management, and government, an equitable division of profits between capital, ability, and labour must be arranged. Interests must be united, industry stimulated, and hope held out to the humblest worker in a Christian colony. When a young man commences life in the honourable estate of Christian marriage, it is the first duty of Christian society to support his hope and energy. The future of this family is a matter of national concern. Steady industry deserves a fair and increasing share in the profits it helps to create. Counsel, if needed, encouragement to the mother in the healthy and virtuous education of her children, and opportunity for hopeful occupation, are all positive duties owed to every member of a Christian society. The fulfilment of this duty depends in a great measure upon the righteous relation of capital to labour.

4. The formation of insurance funds which will secure aid to every worker in sickness or old age. Thrift, self-control, and an honourable sense of independence are the results of such provision, which would be the greatest possible aid to the noble temperance movement.

5. An arrangement of dwellings which will facilitate communication, domestic service and supply, sanitary arrangement, the education of children,

and municipal government. These objects must be secured if the rapid degradation of our poorer English homes is to be checked. Parental influence and responsibility are equally disappearing in the homes from which all sanctity has departed.

6. The entire abolition of all trade in the human body.

The waste of virile force and the degradation of womanly character which result from the barbarous remnant of slavery existing in our midst under the form of prostitution is incalculable. No community which aspires to Christian life can permit this hideous trade to exist. The buying and selling the human body is a natural wrong. The fearful evils, moral and physical, which result from such trade prove its inherent iniquity. Love, with the duties and responsibilities which accompany its expression, is the only Christian warrant for the intimate union of the sexes, and the growth and welfare of society absolutely depends upon the wise guidance of these relations by Christian principle. The wonderful advance of intelligence and moral perception on this vital subject during the present generation is the most hopeful sign of the nearer approach of organized Christian society. As a striking contrast to growing immorality, the possibility and incalculable benefit of equal purity for boys and girls, for men and women, is the great truth which is springing into vigorous life in this Nineteenth Century. A new world of hope and freedom opens to women, a new realm of energy to men, from the consecration

of this mighty power of sex, which is descending upon our age as a great guide for the future. This God-created force has hitherto been squandered in these earlier centuries of our world's life. Ignorance of woman's true dignity and providential position has been the greatest obstacle hitherto in the Christian organization of society. This ignorance now slowly but surely vanishing, opens to us a great and glorious promise of unlimited future progress.

The principles thus expressed in very condensed form appear, from their present maturer development, to be the especial gain of this age. They are the legitimate results of Christian thought, growing in comprehensiveness, and conscientiously applying itself to a solution of the problems of social life.

Every proposition now set forth requires, however, long and careful consideration. Some persons may not realize the dangerous and growing evils which the prevalence of opposite methods of action is inflicting on society. Young countries possessing abundance of unoccupied land may not appreciate evils from which older countries suffer from individual monopoly of land. Other persons may fail to see the full bearing of these principles of Christian Socialism on our daily relations. Others, again, may be entirely unable to foresee the methods by which a Christian organization of society can ever become a practical fact. For these reasons union in preparation is indispensable. The wisest ways of realizing these principles in all their

practical details require the varied knowledge of different classes of persons. They require the careful consideration of many minds, possessing both varied experience and a profound sense of the necessity of Christian organization. If, however, the principles laid down are true, then their realization must be only a question of time. In our towns much may be done to place both business relations and domestic life on a sounder basis. The gradual introduction of methods leading in the right direction is possible, by both men and women, in the two spheres of business and home life, when the end to be obtained is thoroughly understood. A still more rapid advance may be made by those who wish to establish country life on a more Christian plan by uniting religious principle, joint-stock enterprise, and wise guidance in the organization of an industrial colony—a colony which would be the most potent Christian Missionary Society.

Religious principle must be recognised as the essential basis of permanent future growth. Only a large comprehension of the Christian teaching of human brotherhood creates the highest conscientiousness, with a sense of responsibility to an unseen but parental Creator. No accumulation of material wealth, no appeal to the lower faculties of our nature alone or chiefly, will ever hold human beings together in permanent and harmonious organization of daily life.

Christian conscientiousness is the only power we know of, capable of controlling and guiding selfhood.

This controlling force is indispensable in any wise effort to unite human beings together in the varied interests of everyday life. Without religious principle we possess no efficient check either upon the selfish scramble for wealth, or on the soulless pursuit of science, or on the enthrallment of physical pleasure.

Consider some of our popular social maxims—'Charity begins at home,' 'Take care of No. 1,' 'Competition is the life of trade,' 'Demand must govern supply,' 'Buy cheap and sell dear,' etc. No one will deny that there is an element of truth in all these maxims; but their direct logical results, pushed to an extreme under the sole guidance of selfish interest, become diabolical. This is clearly illustrated by a remark once made to my own father by a Southern sugar-planter. He stated that he could raise slaves so cheaply that it was the most profitable plan to use them up in five or six years, and supply their place with fresh ones!

The same necessity for the guiding influence of Christian conscientiousness is seen in the pursuit of science. The modern dicta, 'Medicine has nothing to do with morality,' 'Knowledge is its own end and justification,' are the maxims of heathen, not Christian philosophers. Indeed, many of those who now pursue scientific investigation willingly assent to this statement, having lost all knowledge of the value of true Christianity as the highest spiritual guide of our race.

Accepting, then, the principle of Christian

brotherhood as the necessary religious foundation and constant guide of any true organization, it is evident that all these weighty problems, now briefly indicated must be considered and solved by the 'Church.'

A Church, in the true sense of the word, is a society of men and women who, accepting the Divine Mission of Christ, strive honestly to embody His teaching in daily life. As each age grows out of the life of the preceding age, so the practical incarnation of our Lord's teaching varies in form from age to age. In 1882 the form which Christian life takes must necessarily vary from its form in 1800. Three generations of men have gained immensely in intellectual, scientific, and moral development. All the conditions under which human beings grow up have changed. What we now especially and urgently need from the 'Church' is aid in adapting the never-changing principle of Christian brotherhood to the ever-changing conditions of Nineteenth-Century life. We need sermons and conferences and earnest life in the Church; but the sermons must take up the Christian view of the relation of capital to labour, the Christian view of the relation of the sexes, the Christian protection and sound education of the young—in short, the whole conduct of life, from the cradle to the grave, in private and public. A certain inevitable hypocrisy is engendered by listening week after week to lofty theories which are never put into practice, or to impracticable suggestions. The soul

grows callous when teaching demands one course of action and daily life enforces a quite opposite course. We need to learn in what way our actual life, public and private, can be guided by our Lord's injunction of brotherhood instead of selfhood. Our Church Conferences should be the honest and eager effort of every man and woman to consider together how these true principles can be carried out by them. A Christian Church Conference must ponder the life of that army of little drudges in our underground kitchens, of the blasphemous boys and girls who gather at night in our public places, of the vicious roués who crowd on us from London, of the struggles of the poor householder who knows not how to pay the heavy rent, of the tendencies of the trader oppressed by taxes, who sinks all scruples in the desire to get money, and of the speculator whose one desire is to make 'wealth accumulate, though men decay.' These are the problems for Church Conferences which the practical Christianity of the Nineteenth Century urgently requires should be solved.

It is only on these humble but indispensable foundations that a Church which meets the needs of the age can be founded. It is only in a Church so founded that prayer and praise and the worship of the Great Father can become a glorious reality, and never sink into formalism.

A true Church, then, suited to the needs of this age, must be a self-governing, industrial community, guided by Christian principle, holding and managing

its own lands, varied industries, and colleges. It should send off out-shoots from time to time, new self-governing colonies at home and abroad. These colonies necessarily possessing varied individual colouring, according to occupation and composition, should all agree in the one great uniting principle—organization on the principles of Christian brotherhood. The Christian idea of united interest, instead of the narrow antagonism of individual selfishness, will be the distinguishing mark of true Church colonies—the practical Christianity of the future.

There are large numbers of sincere followers of our Spiritual Guide who clearly perceive the radical evils above referred to: persons who long to devote thought, time, and means to the labour of forming a Christian society; persons who would rejoice to leave their possessions to the noblest Missionary work of the age. But these earnest seers are scattered far and wide; they require the indispensable strength of union. A grand work is before all the Churches to join their members together under the noble banner of Christian Socialism. By careful study of the various practical examples which now exist of successful although imperfect organization, preparation can be made for union together in the formation of a true Church Colony. A band of Christian Socialists thus uniting in earnest preparation (whilst neglecting no immediate duty) will be strengthened and guided in the course of a few years to initiate the most important and urgent work that our age now calls for.

The meaning of the Easter season is the arising of Christianity from the grave—that grave where it lies bound in darkness, corrupting in worldliness, dying through selfishness; but, thank God! not yet dead. May our religious people awake from their fatal lethargy and roll away the stone from the sepulchre, by the establishment of a true Christian Society!

ON THE DECAY
OF
MUNICIPAL REPRESENTATIVE
GOVERNMENT

A CHAPTER OF PERSONAL EXPERIENCE, 1885

ON THE DECAY OF MUNICIPAL REPRESENTATIVE GOVERNMENT

IT is only in the belief that a simple narrative of facts, exactly as they occurred, will show more vividly than an abstract statement can do, the dangers which threaten our free institutions, that I venture to offer this personal narrative to municipal voters, and particularly to women householders.

When, in 1879, I became a householder in Hastings I did not at all realize that I thereby acquired the right to vote in municipal affairs, and that this right necessarily involved a corresponding duty and responsibility—the duty, viz., of voting intelligently, and necessarily a certain responsibility for the way in which the government of the town was carried on.

I soon observed, however, that in the autumn, although I was neither a Conservative nor a Liberal, I was called on by the Conservative and the Liberal candidates for election to the Town Council to ask for my vote, and although these visits often led to interesting conversation, and my opinions

were assented to with the most flattering courtesy before the elections took place, I soon perceived that all influence ceased with the election; the matters went on in the same way without me as with me, and my supposed privilege of voting seemed really to be very much of a mockery. Being, moreover, a peaceable person, and much occupied with subjects of interest, it appeared to be rather a waste of time to concern myself with an election which was managed by cliques on strictly party issues, with no regard to questions of social well-being, nor necessarily to the selection of the wisest and best man, but only of the person who could in any way secure the largest party vote.

Being compelled, also, as far as my limited powers of observation admitted, to criticise the two great parties of the State, as both committing much injustice, and as rather guided by class selfishness than by high morality, I could not feel any enthusiasm for elections carried on by party strife.

I thus began to fall into that easy state of indifference which seems rapidly becoming the general condition of the mass of people who are supposed by their votes to control municipal affairs; I retained, however, an uneasy consciousness that in some way I was failing to meet a duty that was laid upon me. I was roused from this fatal moral lethargy by witnessing what seemed to me an act of gross injustice—viz., a robbery of the poor of their inheritance. This was the diversion of the funds of the Magdalen Charity (a bequest from the piety and

beneficence of past ages, now grown to an income of some thousands annually) to the foundation of a middle-class gran.mar school. The injustice was committed under the sanction of the Charity Commissioners, notwithstanding a brave fight by some of our conscientious inhabitants, carried on for more than two years. But class interests and short-sighted officialism proved stronger than justice in this case.

So painful an experience effectually opened my eyes to the irreligion of not attending to the duties which lie nearest to us, and I saw that the condition of the poor is very near to us. I fully realized, also, for the first time, the constant duty which rests upon all those to whom special municipal rights are given, to concern themselves with the management of the town in which they live, this responsibility especially resting upon every one on whom is laid the duty of voting. Beginning, then, to attend my parish meetings, my sympathy was soon aroused by seeing the bitter struggle of the industrious poor going on all around me, to avoid sinking into pauperism. Cases of inability to pay the rates were constantly coming before us¹ from weary struggling men and women, who, if they sometimes 'drink and forget their poverty,' demand pity more than blame.

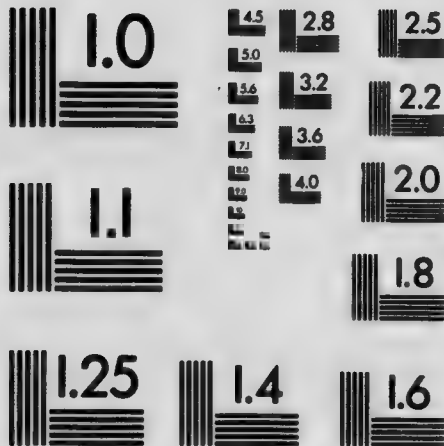
Every year the pinch of poverty grew sharper. My own respectable young servant could not marry

¹ Between four and five hundred summonses for rates this quarter in our little town.



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her decent lover because rent was so dear. As roomy lodging-houses and hotels spread along the sea-front, speculation grew, and the mass of the people were huddled together in smoky cram or squeezed out into dreary suburbs, far away from their work or from opportunities for honest industry. I soon also learned the horror with which the poor regard the workhouse; how they would willingly die in peace in the forlornest home rather than be forced into what they regard as a hopeless, cruel prison. My indignation deepened as I thought of the deed still in our archives, in which, 'I, Petronilla de Cham, of Hastings, in the pure and lawful power of my widowhood,' grant a tract of land for maintaining the poor old men and women of Hastings in decent maintenance and godly service; the brothers and sisters of the Magdalen Hospital. 'And I, Lady Petronilla and my heirs will warrant and defend the aforesaid five acres of land with precincts, to be held by the brothers and sisters freely, quietly, well, and peacefully for ever,' they praying for the souls of their benefactors.

As descendants of humane and pious ancestors, it seems to be as clearly a religious duty to consider the condition of the poor in 1885 as it was in 1292, when Lady Petronilla de Cham made her foundation gift to the Magdalen Charity.

The more I considered this important problem of how to aid the struggling poor in their heroic efforts to live decently, the more important to my mind became the subject of taxation; how the rates of

a town are raised, and how they are expended. Unhappily, we see all over the country that, in the same way, ancient endowments for doles, retreats, pensions, and portions are swept away because the workhouse system is said to provide for the poor; ancient endowments for training, clothing, and apprenticing poor children are also swept away, because the 'Board of Education provides for the poor.' Thus the various necessities of social life, education, benevolence, etc., are being committed to the hands of officials—*i.e.*, everything is rapidly being thrown upon the rates, until the rates crush the poor into pauperism.

Now, the question of rates is not at first sight an attractive one, particularly to a person who has unusually little talent for arithmetic. But in the present day they take the place of ancient beneficence, and are administered by Town Councils instead of Church organizations. I therefore determined to attend a meeting which was being called to meet the Local Government official, in order to obtain sanction for a new loan. This was my first appearance at a 'Statutory' meeting. To my surprise, when I took a seat at the Council Board, I found that I was the only non-official ratepayer present, although the sum to be borrowed was a large one. It was stated that this proposal had received the unanimous assent of the ratepayers. To this statement I was compelled to make a short protest, as I had learned from inquiries that many ratepayers knew nothing about the proposed loan.

I was informed that the time for objections had not arrived; and the London official proceeded to inquire into various details of the way in which the loan of six thousand guineas was to be spent, extent of grading, kind of concrete, etc. When all was completely settled I was then requested to state any objection I had to make. I spoke of the burdens of taxation on the poor, and I begged to know what was the present debt of the town. I found that with this new loan our municipal debt would be nearly a quarter of a million. This seemed a very large debt for a small town, where the people found a difficulty in paying their rates, and as a prudent housekeeper I objected to go into debt for our municipal housekeeping. I was informed by the Local Government Board Inspector that 'that was a question to be settled at the polls' So, of course, my single protest was of no practical use. This occurred in August. I then thought that, as the November elections were approaching, it might be useful to try and get municipal questions discussed with the candidates who were to be elected for three years to the Town Council.

The proposed councillor in my parish cordially assented to the proposal I ventured to make to him—viz., that he should meet the ratepayers before the time of the elections, and discuss with them various important questions which would come before the decision of the Town Council. This gentleman willingly promised to attend such a meeting if it were called.

Unfortunately, I could not find any householder

willing to aid in such an effort. The following is a type of the responses received from householders :

‘I do not think my presence at a conference would be of any service. I have so little knowledge of municipal affairs, never having attended a meeting since I resided in Hastings.’ The same sort of answer came from busy tradesmen and leisured gentry. It therefore seemed that a more decided educational effort was needed, an effort to show our voters how a Town Council really represented in modern days much of the practical action of the Church in past ages, and that it ought really to present the Theocratic idea—*i.e.*, government by the Highest Good. But here, too, unhappily, I could find no one who did not seem to think that the function of a Town Council was to save them all trouble and responsibility, and that it must be elected on party grounds.

Thus, more and more I recognised the profound character of the disease of indifference, which has become endemic in our municipalities, and the urgent need of remedial measures. I therefore entered into correspondence with the Social and Political Education League, which has borne in succession the honoured names of Professor Seeley and Mr. Froude as Presidents. I received a cordial letter from the honorary secretary, who forwarded a list of 107 names of lecturers, with numerous addresses that they would be willing to deliver. Unfortunately, in this printed list of several hundred lectures I could find nothing that met our special

need—viz., short, simple, progressive instruction, inviting questions, 'on the use of a Town Council and the meaning of a vote.' I was meditating on what to do when I became most unexpectedly involved in municipal work, where I was compelled to take a prominent part, for which I was not fitted either by knowledge or experience.

At the town meeting in August already referred to, when the addition to the public debt was made, a Corporation Bill was spoken of, which appeared to be of very great importance, and which was to come before the town later. I therefore watched the notices by the church doors, and marked down the date of the Statutory Meeting, which must be called in order to sanction this Bill. I was much surprised not to see attention strongly called to this important measure by the local press and others; but the local politicians were all in such a state of excitement because Hastings was to lose one of its Parliamentary representatives that the way in which municipal affairs were carried on seemed to excite no interest. I called at the Town Clerk's Office a few days before the meeting to sanction the Bill was to take place, and asked for a copy of the Bill, but was told that there were 'no copies' for ratepayers; neither could the Bill be seen. I spoke to about ten persons in the course of the day, but no one knew anything about the Bill. I then wrote to several ratepayers to beg them to attend the Statutory Meeting. One replied that there must be a mistake as to date, naming a meeting three days

later, which, being a 'Party' meeting on Redistribution, entirely drew attention from the municipal meeting. Another householder consulted a gentleman friend, who told her that the proposed Bill was one to lessen taxation, so there was no need of attending the meeting. I was unable to find a single ratepayer who knew anything about the Bill, or had even heard of it. The time came, a very stormy evening; about seventy persons attended out of over 8,000 ratepayers. No one had seen the Bill, which, from the short abstract given by a Councillor, was evidently of the utmost importance to every class of the inhabitants, and particularly to the industrious classes. It was urged by the Town Council Committee in charge of the Bill that no opposition to it should be made, for two reasons. In the first place, the next day was the last chance of registering the Bill for the present Session of Parliament, and a year would be lost if the Bill were not accepted that night; in the next place, it was stated that any opposition would be very expensive to the town, for, as they had already paid £500 for the expenses of the Bill, and would pay about as much more to complete it, if any opposition were raised it would cost the town some thousands of pounds.

As no other ratepayer seemed to discover any flaw in these statements, I ventured to suggest that, as no one amongst us had seen the Bill, we ought not to sanction it without any opportunity of examination. and that it would be better to lose a Session

than do so. I therefore begged to move an adjournment; this was seconded by a ratepayer, but not put to the meeting. The Bill was accepted in the name of the ratepayers by a vote of 47, the Parliamentary agent who directed the proceedings most courteously assuring me that 'there would be ample time to object to the Bill in London.' Of course, I knew, and many of the poorer ratepayers present knew, that it would be too late to consider the Bill after it was accepted in our names; but I was struck with the inability of those present to formulate their objections, although much dissatisfaction manifested itself in the meeting. Entire ignorance (in which I fully shared) also existed as to what steps to take in such a case. Had I insisted, as I ought to have done, upon the motion for adjournment being put, it would probably have been rejected by a small majority. But I was utterly ignorant of what was right to do in such a strange position, and it seemed almost unladylike for me alone to oppose the Mayor and Town Council, with their Parliamentary Committee and legal advisers, particularly as it was insisted that opposition meant distrust of the Council, whereas I thought simply of my duty as a ratepayer. I did not know then, and no one present seemed to know, that any ratepayer has a right to demand a poll; and, if insisted on, it must have been allowed. In this case the few pounds it would have cost the town would have been well expended, in delaying what proved to be an exceedingly bad and retrograde Bill. But nothing has struck me

more in this singular experience than the utter ignorance of all our otherwise intelligent burgesses as to the steps by which their municipal rights may be guarded, either in the borough or in London. This ignorance seems to arise from the inattention and habit of indifference to municipal duties produced, not only by the pressure of private affairs, but by exclusive absorption in party politics.

As soon as the Corporation Bill was thus nominally accepted by the burgesses, copies of the Bill were allowed to circulate. I saw at once, on scanning this enormous Bill of 243 folio pages, thus sprung upon the town, that it was a very retrograde Bill, and would prove especially tyrannical to the poor. Being fully convinced that a fundamental duty of any community is to guard the industrious poor from being crushed into paupers, I looked at the Bill from that point of view, and was shocked by it. It was drawn up to favour the growth of that modern mistake, a fashionable lodging-house town, by endeavouring to attract rich temporary visitors, instead of promoting permanent productive industry. By its provisions it largely increased the debt of the town; it withdrew expenditure from control of the ratepayers; it provided for a largely-increasing bureaucracy, by placing all the new institutions under officials of the Town Council; it confirmed and established a virtual octroi on coal and the necessities of life; it introduced the most minute and arbitrary regulations in relation to building, sanitary inspection, police arrests; it re-enacted the

obsolete regulation which regards vice as female; and in many other ways it sought to convert the Town Council into masters instead of servants of the people.

I immediately commenced asking individual ratepayers if they had seen this Bill, which interfered with every class of inhabitant. No one had seen it, and later inquiry seemed to prove that not one member even of the Town Council itself had read the Bill carefully through, outside the little Parliamentary Committee who followed the guidance of the London official agent.

I am glad to say that the first note of serious public alarm was sounded by the Medical Profession, who, finding they were to be turned into family spies by this Bill, refused to submit, and, having an organized medical society unanimous in opinion, they commenced an opposition to those objectionable clauses which affected their position. But weeks of precious time were lost before attention was aroused to the generally tyrannical character of the Bill. At last the growing discontent found a voice in an active, enlightened burgess. A crowded public meeting was held, attended largely by the poorer ratepayers, and a committee was formed to see what amendments could be introduced. But there was then not time to examine thoroughly this enormous Bill before it was read in Parliament. Here, again, two circumstances were noteworthy. First of all, the complete indifference of the richer inhabitants to the Bill and to all that involved

trouble on their part, with the dread of the poorer inhabitants of the frightful law expenses which opposition would entail.

The second noteworthy point was the utter ignorance of all parties as to the best and exact method of procedure in the various steps necessary to be taken in seeking to amend or oppose the Bill—as, for instance, the times allowed for the various stages, the parties to address, the ways of addressing them, the rights of the burgesses to appear, etc. No one, either layman or lawyer, possessed exact detailed knowledge.

For my part, I sought information at headquarters in London. Here, once for all, I beg to state that nothing can exceed the courtesy and often kindness with which my crude inquiries have always been met by those highest in authority. Indeed, all my life long, though painfully compelled to work against rather than with social conditions, I have always found men eager to help an honest, unselfish worker.

In London I learned some rather surprising facts. These facts may be thus briefly summarized: First, that it is the effect of the action of the Central Government to weaken the Municipalities by encouraging them to run heavily into debt; secondly, that, taking advantage of their weakness, they apparently intend to assume themselves the authority that has hitherto resided in the Municipalities as self-governing communities.

These are very serious facts, not at all due, I

think, to any influence exerted by the enlightened heads of Departments, who change with every administration, but to the enormous growing system of permanent officialism, which acts like a tremendous machine, crushing individual freedom, because it naturally seeks to work without friction. The term 'vortex,' familiarly applied to the system when any individual interest is drawn into its current, well expresses the terrible power of these official forces.

My first amazement was awakened by the reply to my objection concerning the increased power of borrowing given by our Hastings Bill to a little town of 40,000 inhabitants, that already had a debt of nearly a quarter of a million. 'What is the rateable value of your town?' was asked. '£300,000.' 'And do you consider a quarter of a million a large debt? Why, let me tell you, your town is most fortunate in having such a small debt! Do you not know that Government allows you to borrow to the extent of two years' annual rating?'

Such was the astounding view taken by a political economist of the duty of Government. I thought of our hundreds of poor ratepayers unable to pay their taxes. I thought of the statistical report that 'In Great Britain the municipal and other local debts rose in the period of ten years from 84 to 140 millions,' and I was simply dumb with fear for the future. For I have already seen that power to borrow means encouragement to borrow, and that the municipal purse is not regarded as a Trust, to

be more scrupulously guarded than the private purse.

My next discovery related to sanitary and police clauses, and particularly to those which pressed especially upon women. I maintained that there were no such things as good brothels; that they were illegal institutions, to be gradually and steadily suppressed by the growing morality of the people, who should be encouraged by increased facilities to set the law in motion; and that any legal distinction as to bad houses that were 'a nuisance to the neighbourhood' was a mischievous distinction. I also pointed out that the term 'prostitute' should be entirely struck out of all legislative enactments as an obsolete injustice, and that any necessary checks to growing vice should apply to 'all persons habitually or persistently' offending.

These honest suggestions were considered quite impracticable in official circles; but I learned that the Central Government would be quite ready to strike out any unusual local provision in order to take all sanitary and police measures into its own hands.

This appeared to me a most alarming intention. Surely a deadly blow would be struck at individual liberty if all sanitary and police regulations were to be drawn into the 'vortex.' The mistakes of municipalities rouse individual conscience, and may be turned to the education of the community; but take away this natural power of growth, and we become a feeble, self-seeking mass, swayed by demagogues, and the slaves of official Bastilles.

I began to understand the wide bearing of a fact that had excited my surprise a short time previously. Scandals occurring in one of our new parks, permission had been obtained from the Local Government Board to place an additional policeman there. Noticing this fact, I asked our Councilman: 'Why on earth did you consult the Local Government Board about our own policemen? Does not our Watch Committee attend to our police matters?' He replied: 'Oh, don't you know that the Local Government Board pay part of our police expenses?' Looking over the Borough Accounts for 1884, there, sure enough, I find this police item: Treasury contribution, £1,881 16s. 1d.

Our poor tax-payers cannot pay their rent, so we rob Peter to pay Paul; we get money from the General Government, which all have to contribute to supply, with the idea of lessening local rates, and in return allow the central authorities to interfere with our police. Surely this is selling our birthright for a very deceptive mess of pottage!

As our Town Council became aware of the legitimate discontent which existed respecting the Bill they had sent up to London, with really imperfect knowledge of its contents, they endeavoured with willing courtesy to meet the Ratepayers' Committee, and at the last moment for legal opposition, certain important amendments were accepted by the Council, which removed the power of arbitrary arrest by the police, and softened some of the other harsh interference with individual rights.

The People's Committee were compelled to accept these imperfect concessions. The limit of time for opposing the Bill had arrived. No rich or leisured resident showed the slightest concern in this measure. The remark had been made to me by a high London authority: 'If your townspeople really consider this such a bad Bill, then they have nothing to do but to put their hands in their pockets and raise the money to oppose it.' This remark shows how little rich people, high in authority, know of the conditions of life in a fashionable lodging-house town. The work of revising this Bill—work necessarily incomplete—had been done by burgesses of moderate means and overwhelmed by private cares, and the time needed for this public work had been stolen from sleep. There was neither possibility of withdrawing a Bill on which much public money had been already expended, nor of raising the heavy sums of money necessary to carry on legal opposition to it.

Thus, a new Corporation Bill of most retrograde character has been forced upon the town—a Bill which greatly strengthens the official or bureaucratic organization, removes much of the control of rate-payers over expenditure, plays into the hands of a centralizing Government, establishes protective duties on the necessities of life, and vexatiously interferes in various ways with the legitimate personal liberty of the inhabitants.

The latest 'Battle of Hastings,' in 1885, has ended in defeat.

This familiar narrative of late experience in one of our little towns is now given for a practical purpose.

A similar course of things appears to be taking place in all our towns, large and small. Unchecked, this neglect of social duty and thoughtless submission to official formalism must steadily deteriorate our national character. It can only be checked by the voluntary organization of individuals who will resolutely battle for the Theocratic principle of human rights against the selfish demagogueism of party strife. The plainest fact in history is the Divine Moral Government of the world. A nation given up to selfishness and lust always degenerates and perishes, and is replaced by new races. This is the great lesson of the ages. We only fail to read it because the method of action of the Creative Power is so much grander and surer than the methods of our individual action. But all that is strongest and noblest in our human nature can be but a faint reflection of what is immeasurably stronger and nobler in the Almighty Creative force. The careful study of our own human needs measured and limited by the needs of all other human beings is the foundation of all growth. This mutual limitation and government of human rights by human duties is Theocracy. It alone can be a permanent form of Government, for a righteous democratic rule must inevitably be Theocratic rule.

If the Churches cannot yet see that the education

of the people in their municipal life is the urgent need of the age, if political parties are too corrupt or self-seeking to learn the same lesson, then help must come from other sources. Perhaps women ratepayers not yet entangled in party politics, and men who have risen above them may hear the Divine voice which speaks to them, and may kindle a little sacred fire which will grow into a beacon-light to the nation.

It is now urgently necessary to consider the way in which organizations of householders may be gradually formed in all our municipalities, for the purpose of mutual education and legitimate criticism.

An unofficial organization, sufficiently suited to respond promptly to any sudden municipal call, has really become of vital importance. The animating centre of such organizations must be three or four earnest, unselfish persons (a true Theocratic brotherhood) who will carefully study municipal or social questions, and plan and initiate a work of gradual education, particularly addressed to women voters and our poorer ratepayers. I especially mention women because nothing has been done for their enlightenment as to the new duties laid upon them in 1867. It is a noteworthy fact that when 2,000,000 more men were lately placed on the register, the most active efforts of the Cobden Club and others were at once given to instruct these new voters after party fashion, but no effort whatever has been made directly to instruct the hundreds

of thousands of women to whom the municipal vote, the corner-stone of our political system, was given in 1867.

There are questions of policy having a large and important national bearing which need to be studied by united householders. Few persons know clearly what should be the direct action and indirect influence of a Town Council—its duty to resist encroachment by the central government; its duty to encourage the interest and action of burgesses in their own institutions, and to diminish the number of irresponsible officials; its duty to consider the public purse as a solemn trust, and to invite careful study of municipal accounts.

The abolition of obsolete practices, the consideration of changes or adaptation to modern needs of municipal regulations, need consideration by householders.

Few burgesses seem to know that ten ratepayers in a parish possess the right to nominate any one of their fellow ratepayers to represent them for three years on the Town Council. The nominations are now made in secret by party cliques, a practice never intended by our Constitution. This mischievous practice can be directly checked by the liberty of independent action thus provided for. I have already referred to the right to demand a poll at any statutory meeting where serious objection is taken to any proposed measure, a most important guarantee of municipal liberty, quite unknown, apparently, to the majority of ratepayers.

I need not enter upon the important questions of the selection of Poor-law guardians, of members of School Boards, and other officers supposed to be elected by ratepayers, because the same criticism applies to all. At present, indifference to all these important elections prevails unless a sharp contest springs up on party politics. Yet questions really vital to our national welfare are involved in these apparently minor points in our municipal housekeeping, and I believe that the indifference now felt towards our borough elections, when not stimulated by party strife, proceeds from ignorance of these larger relations.

It is in the hope of seeing this great municipal education begun on a large plan, quite above party strife, that I have ventured to refer to this episode of personal experience.

Those who profoundly believe in the moral government of this world, and who would help in establishing a true Theocracy, must seek truth from all sources. Our modern prophets, Herbert Spencer, John Ruskin, and many another seeker for truth, must be earnestly listened to; not as gods, but as men who with human limitations, nevertheless through evil and good report, never swerve from the steadfast unselfish search for truth—men who are enabled to see clearly great aspects of Divine truth, and who can refresh and guide us in our humbler, but providential task. Such men are often the truest followers of our Lord in this nineteenth century.

To all women voters, to all our poorer ratepayers, I earnestly recommend the formation of a union for the study of municipal rights and duties, and I hope that my humble but earnest effort in this direction will enlist the sympathy and guidance of all those truth-seers most able to help us.

ADDRESS

DELIVERED AT THE OPENING

OF THE

WOMEN'S MEDICAL COLLEGE

OF THE

NEW YORK INFIRMARY, 126, SECOND AVENUE

November 2, 1868

ADDRESS

OUR Faculty has kindly insisted upon my saying the first words which our new College addresses to its friends, and I am bound to comply with their desire, although I could have wished that some abler person might have shown the broad significance of those principles which are involved in our work.

True growth is slow (as we measure time) and silent. The tiny sapling shoots up with invisible and noiseless force ; so have we worked on—silently. Yet the truest growth has its striking phases of development. We watch with glad anticipation the first tender green of budding foliage; later still we luxuriate in the delicious flowering of the apple-blossoms in May.

It was in 1853, in a parlour in University Place (as some two or three of those now present will remember), that the little slip of a Medical Institution for Women was planted, which slowly grew till it budded into a small hospital in 1857. Many who are here to-night will recall the opening of the hospital wards in Bleeker Street and the cordial words of encouragement then given. They will remember

that noble young minister, cut down in his promising youth, who hurried in from his pressing duties in a distant city, carpet-bag in hand, resolved to give us a hearty God-speed, because the good cause was unpopular.

Now the tree has blossomed into a college, and once more the friends gather round to rejoice in its promise of larger usefulness.

It has required fifteen years of patient work—work by faith, for the way has been very dark—to lay the foundation of a college. This has seemed strange to most persons, for many women's colleges have sprung up meanwhile; hundreds of women have received the physician's diploma; some have become highly-respected practitioners, and some have gained large sums of money. Of the early friends of the Infirmary, many have died, and some have been discouraged by its slow growth.

It is an easy thing to found a poor college. Our liberal Legislature grants a charter to anyone who asks for it, and an audience can always be gathered together by speeches and music to witness the presentation of learned-looking parchment rolls to a class of well-dressed students; but charter and diploma do not necessarily guarantee the fitting education of a physician. To found a really good college is a work of great difficulty, and up to the present time has been impossible for want of professional assistance—of skilful teachers, and ample clinical provision. To this difficulty has been added another—the want of funds.

We have been facing these two perpendicular cliffs—money and skill—for fifteen years, and striving in every possible way to climb them. Everyone will sympathize with us in relation to the first difficulty, but, at the same time, the promoters of ordinary benevolent enterprises can hardly realize the added difficulty of begging for a principle. People will give to a charity or popular enthusiasm, but very seldom to a principle, more seldom still to such an unpopular idea as the education of women in medicine.

Little by little, however, we have laid one stone upon another, until we have gained a foundation sufficient to stand on. It is small, certainly, but solid, and we all feel great hope of surmounting the first grand difficulty.

In relation to the second obstacle—the want of professional support—I need only refer to the prospectus of our College to show how happily we have at last been able to surmount this second difficulty. How this has been accomplished I really do not know. We are so accustomed to be 'despised and rejected' that encouragement, welcome, success, seem unaccountable. It is like breathing a new and delightful atmosphere, which is, needless to say, strange and dream-like; and one almost fears to wake up with a shock and find again the cold, the gloom, and struggle all around.

But, from whatever cause proceeding, the support now given to the formation of the College is warm and cordial. Should we fulfil the expectations of

the wise and experienced physicians who have sanctioned and counselled the formation of this school, professional assistance will be increased to the utmost extent the student may require.

We enter, then, upon this work under the most favourable auspices, and we are encouraged to undertake it by the earnest request of medical women from every part of the country. From the east and the west, from California to Maine, have come the same heartfelt expressions of interest in the establishment of a sound plan of education, the same hope that other women may not enter upon their work under the disadvantages of imperfect preparation that they have had to contend with. The list of excellent women physicians who have enrolled themselves as fellows of the College shows the trust which is felt in this undertaking by our respected co-workers.

We have endeavoured to follow out the suggestions of our most experienced medical teachers, and incorporate the following features into our plan of instruction :

1. A three years' college course.
2. A larger proportion of time devoted to teaching and practical instruction than to lecturing.
3. A progressive succession of studies.

I shall only refer at this time to one of these—viz., the three years' college course. I would remark, for the information of those who are not familiar with medical tuition, that the Legislature, in granting to a school the right to confer the degree of Doctor in

Medicine, requires that such degree shall only be given to those who have been studying medicine for three years. Three years, then, is the obligatory time of study, and no degree is legal which is granted on a less term of study. But in the ordinary course of instruction the greater part of that time is spent in private reading, the College being only responsible for the instruction of two winter sessions of five months each; in other words, for ten months out of the thirty-six required by law. The remaining twenty-six months may or may not be well spent; it depends upon the intelligence, resolution, and opportunities possessed by each individual student. It is the great wish of the profession to increase the collegiate part of instruction, and require attendance at college during a portion of each of the three years of study. Many colleges have added spring and autumn courses, but the attendance of students is not obligatory, and it seems impossible to lengthen the college course without united action.

For women there exist so very few opportunities for profitable study that these precious twenty-six months are, to a great extent, wasted. At the same time a weighty responsibility rests upon all those who introduce women into medicine to see that they are fitted to fulfil the trust worthily. Medicine is a learned and confidential profession, and should draw into its ranks the most highly educated, the most irreproachable in character. This most noble profession, like all high things, is susceptible of the

worst abuse. The good which women may accomplish in medical practice is also the measure of the evil that they may do. Education, long and careful, should be the safeguard of society in this matter. From many causes women are peculiarly exposed to a great temptation—that of practising ignorantly and superficially. The College should foresee this danger, and provide the long and careful training which can alone discriminate between the worthy and unworthy candidate. This education, while it sifts out the incompetent, will give to the earnest student those advantages of drill, of substantial knowledge, of professional support, without which women enter upon the practical work of medicine under the most cruel disadvantages.

We propose, therefore, to adopt the most advanced plan of instruction, and have arranged a progressive course of study which will require for its completion attendance at college during three winter sessions of five months each, which we hope eventually to be able to extend to eight months. We shall thus be able not only to give to each student an additional term of systematic instruction, with all those advantages of hospital practice which belong only to a large city, but we shall be able to keep her under college influence during the remainder of each year, directing the intermediate studies, and forming much more accurate acquaintance than were otherwise possible, with the qualifications of each candidate for graduation.

We are compelled to face many difficulties by

this plan. We must anticipate a smaller class at first in consequence of the additional expense laid upon the student, for however low the price of tuition may be made, the added expense of boarding has to be met. The student also, at the outset of her career, is unable to appreciate the great advantages of this enlarged instruction, and is naturally tempted to go where a diploma may most easily be gained. We are quite sure, however, that in a few years the thorough education given by our College, and the distinction conferred by its diploma, will draw to it the best students from every part of our country.

There is one other feature of our College that I must allude to, as I feel in it a profound and special interest: it is the introduction of hygiene into our course as a prominent and obligatory study.

It seems strange that the prevention of disease should not always have engaged the thought and instruction of the guardians of the public health at least as fully as the cure of disease, and yet I believe that this is the first college in America to found a chair of hygiene. Consider the subjects involved in the development of a healthy human organization—a healthy race. Physical and moral training; the inheritance and transmission of qualities; the peculiarities of individual constitution; the nature and influences of climate, soil, food and customs; the prevention of epidemics; the municipal regulations of our cities, etc.—all these subjects come directly and unavoidably into the department of hygiene. Surely every student who receives the degree of

Doctor should be thoroughly acquainted with all that Science at present knows on these subjects. How else can he fulfil his noblest trust—the guardianship of individual and public health? For a specialist with a narrowed range of duties such knowledge may, perhaps, be of less importance; but for the family physician, the trusted friend and counsellor year after year—for the public-spirited physician who would give to his wisdom and experience the largest usefulness, these studies are indispensable, and his initiation, his first impulse and interest in this knowledge, should surely be given by his college.

There is one branch of this subject which I think must weigh heavily on the hearts of women physicians, and which will, I hope, through them, engage the attention of every thoughtful woman in our land—I refer to the frightful mortality of young children. Children are born to live, not die. There is a wonderful force of tenacious vitality in all growing organizations—far more proportionate vitality than in the old or even the adult; yet, notwithstanding this beneficent provision of nature, we destroy our young children nearly five times as fast as the other members of our social body. If every woman in our city could hear the daily moan of these dying infants, could feel that every day multitudes of bereaved mothers were weeping over untimely graves, and that her own skirts were not clear of this shedding of innocent blood, we should see an army of earnest co-workers eager to save this multitude of helpless children.

Infancy and early childhood are the especial charge of women, and how do they fulfil this trust? It does not do to look around upon a well-furnished home, bright with the smiling faces of happy children, and say, 'Am I my brother's keeper?' Each one is his brother's keeper to the direct extent that knowing an evil can be cured, he refrains from doing his part to cure it. Did the women of our city resolve to save these children they might be saved. Year by year the mortality might be lessened by the sanitary knowledge diffused by women, and the sanitary regulations their influence might establish, until from their own little circle they could look with joy to a bright cloud of witnesses beyond—thousands of useful lives saved to their homes and their country through their aid!

This suggestion of important practical usefulness will give force to the great principle involved in our College—scientific training for women.

Interest in natural objects, careful, comprehensive observation of them, enthusiasm for unselfish and impersonal ends, are the main principles of scientific study—principles that would enter with invigorating force into the mental development of every girl, that would regenerate the life of women.

Science is no hard dry thing as some imagine; it is the earnest study of this wonderful world around us. It will take the form of each individual mind. In a narrow unimaginative nature it will seem hard and dry; in a warm and loving nature it will flow into every form of benevolent action.

It might work a most beneficent change in the relation that we all consider most sacred—the relation of a mother to her children.

The immense force of habit, second only to the original type of constitution, and often overpowering even the original tendencies, is, nevertheless, formed by the silent working of influences, hour by hour and day by day, that are invisible and cannot be measured, that seem absolutely valueless, taken item by item, in the long account, and yet in the aggregate they will save or ruin the body and soul. A mother may instil the love of reading or the love of dress; she may form the habit of out-door exercise or the habit of gossip not by the set precept or even formal regulations, but by her own tastes unavoidably moulding the tastes of her children, and flowing out naturally into these external arrangements that inevitably reflect the ruling spirit or affections of the individual. Did the mother possess a hearty interest in the wonders of field and forest, of sea and sky, what a treasury of delightful intercourse might be found in the varied environs of our city! A mother's love joined to the broad tastes and knowledge would never weary of the ceaseless questioning of childhood; the older the child, the closer and more influential would be the companionship. The holiday by the sea-side or amongst the mountains, so wasted now in idleness and frivolity, might be a rich harvest-time of delightful knowledge drawn from the treasures of land and water.

It is, then, because of the great value that

enthusiasm for natural science would be to woman, value to the individual life, to the home life, and to society, that I think this College will owe its greatest interest. From the fact that it is a Medical College it will derive its practical efficiency in cultivating a taste for science.

A lady, now world-famous, once said to me before she began her noble career: 'We Englishwomen can study anything under the sun that we desire to acquire. Not the slightest obstacle is placed in the way of our becoming learned to any extent; but any attempt to turn the knowledge to account, to work with it, is met with the bitterest opposition, is ridiculed, sneered at, frowned down. Yet the greatest impetus to study, the natural values of study, lie in some noble career.'

It is from this tendency of human mind to pour its knowledge into some definite form that our Medical College, with its broad practical uses, may prove so valuable as a centre for scientific study. As it becomes older and stronger it will spread into those collateral branches as botany, zoology, comparative anatomy, which will form so many points of union to the professional and non-professional. Classes should naturally form in connection with it for nursing, sanitary visiting, for botanical and other excursions. There is no limit to its practical usefulness if the spirit that animates it be earnest, truthful, and intelligent.

We enter, then, upon our college work with a bright hope that stretches beyond the college walls

into the homes and cities around; into the higher civilization of the future as well as the present.

Our excellent Faculty, in entire accordance with these views, commence their patient and laborious work with a sustained enthusiasm which recognises the difficulties in our way, but is resolved to conquer them. They share the large and liberal views of modern medicine. They belong to no 'pathy,' to no narrow and bigoted sect. They are members of that great catholic community of science which, from the 'Father of Medicine' onwards, in every age and country, under the most diverse practical forms, has sought for truth through observation, experiment and calm deduction; has proved all things, and held fast to that which is good.

We invite the co-operation of all in this noble work. Especially do we invite the co-operation of women. United action is of immense importance in so arduous an undertaking as this. We will do everything in our power to conciliate diverse interests. Principle only must not be sacrificed. The College must be an honest and earnest attempt to give to women the very highest education that modern science will afford. It is on this ground that union must take place. This school is the only one that the profession has confidence in, the only one it has sanctioned. It has laid its broad foundation by fifteen years of patient work, and it will quickly rise into an edifice of noble proportions if all friendly helpers will unite in its construction.

THE RELIGION OF HEALTH

A Lecture delivered in 1871

THE RELIGION OF HEALTH

THE words 'the Religion of Health' convey a profound meaning to the physician who has spent a lifetime in relieving physical suffering. I will try and state what those words seem to me to imply.

Obedience to Divine law is the highest wisdom of the human race.

Wherever God's laws are clearly visible, stamped in immutable characters so plain that every human being who is willing to read them can do so, then the wisdom, the happiness—nay, the simple common-sense of the race—lies in obeying them. The first lesson every one of us has to learn profoundly is his subjection to law. There is no escaping this inexorable destiny. Although each one is born with free-will, his type—the plan and pattern of his being—is born with him also. This type is a limitation to the nature, but it is also a guide; it is the finger of Providence showing him the road to follow in the great wilderness of creation; it is the Divine order, according to which each one can freely grow and expand in body and soul to the finest proportions. True freedom consists in the voluntary choice of

this type, in the full acceptance of all its conditions, and in the endeavour to unfold its capacities. The will may refuse this type, may deny the laws that govern it, may seek for license in a lawless rejection of Divine order, but it is soon arrested by endless obstacles, and persistence in the unequal struggle will only end in degradation and self-destruction.

We recognise a Divine law when we see it existing age after age unchangeably, carrying order and beauty in its fulfilment; penalties, discord, desolation, with infringement. These laws are grand in design, beneficent in their effects—equally so, whether we observe the marvel of parental love, or explore the wonders of the skies; whether we clothe them in warm, human garments, indispensable to the simple, loving heart, or frame them in the clear precision of scientific formulæ, indispensable to the truthful mind.

If there be one law that all can clearly recognise in the existence of the material world around us, it is the unvarying method of human development from infancy to old age. A certain plan exists, according to which the infant expands through childhood and youth into manhood, and thence changes through elderly life into old age.

This plan never varies in any epoch, or race, or country. It is the same for the lowest savage tribe as for the most cultivated race. No effort of ours can change this unvarying sequence in human life.

This is a wonderful fact. It is so common that we hardly notice it. Yet it is wonderful, because it

is so common—so common as to be universal. It rises, as we regard it, into the dignity of Law.

Reverence for this unity of life increases the more carefully this strange fact, called the human body, is studied, the more fully we understand what it is that thus remains unchanged age after age. We speak of the body as if it were a single, simple thing, to be used as a tool and then laid aside; but its complicated structure is a little world in itself. As a machine, it is such a model of compactness and ingenuity that no human skill can approach its perfection. It possesses a twofold life—a life for itself as well as a life for our use. In its own proper life it carries on a thousand curious operations necessary for its growth and maintenance, quite independent of our volition or consciousness. It contains extensive manufactories full of complicated and delicate machinery for the production of sugar, milk, acids, alkalies, salts; it has storehouses of iron, lime, and other chemical substances; there are magazines where it lays up supplies against a time of scarcity; it has its refiners and scavengers; apparatus for warming and ventilating; it has pumps and propellers constantly at work, and a more perfect electrical apparatus than has ever been invented. All these remarkable operations are directed by intelligence, working according to a plan, and combining these manifold energies for one purpose—viz., the maintenance, during a certain period, of a healthy human body. Besides this independent existence of its own, the body possesses

a life of relation, by means of which it is fitted to the uses of individual and social existence. Its powers of locomotion, its active senses, its faculty of feeling, its wonderful human hand, and its still more wonderful human brain, all belong to this other use of the body as an instrument for the expression of intelligence and emotion.

Equally remarkable is the system of general unvarying laws by which this living structure is governed. The first law we notice in human growth is the precedence of physical over mental growth. We observe that physical development, though never separate from mental development, is always in advance of it. This is shown by the wonder and delight which the parent receives the first sign of awakening intelligence in the young infant, the first smile, the first indication of observation. It is the awakening mind. But every physical function essential to life has been perfectly performed from the first moment of birth as perfectly, according to its wants, as it will ever be performed throughout life. This precedence of physical life continues throughout the whole period of growth, though it strikes us less as the years roll on, and the mind gradually assumes that mastery over the body which should be the condition of adult life. The brain is the last part of the body to cease growth. Every other organ is perfectly formed, every bone consolidated, the physical organization complete, while the mind, with its necessary organ of expression, is still growing. I

place this important fact first amongst the rules which govern the human economy because it strikes the key-note of education; and it is only through a thorough appreciation of this principle that we shall beneficially change our present systems of education.

Each age has its own special method of existence; thus there are laws for growth, for maturity, for decay. There are the great facts of growth by exercise or use; the necessity of maintaining a just distribution of force amongst the various parts, lest one grow at the expense of another; the alternations of action and rest required in every part of the economy; the varied life of different functions which give to each its individuality and special rule; the varieties of race, of temperament, of individual peculiarities—these will slightly indicate the extent and variety of these unchanging laws by which our human nature is moulded. Their importance may be realized more fully by dwelling for a moment on one or two of them.

What may be termed the balance of power or just distribution of force in the various parts of our physical and mental nature—according to each individual type—is essential to the perfection of the organization—it is, indeed, the measure of health. It is attained and preserved by the due exercise of all the functions of our nature. In ascertaining what is this due exercise, we observe that the different functions of the human being are subject to varying laws of constant or occasional

action. The higher the object of a function, the wider is its scope, the longer are the intervals of rest required, and the more direct is its subjection to reason; it is taken from under the control of the automatic vegetative life of the body and placed under the direction of the central authority—Reason—Conscience. Thus, we see the lungs, whose sole object is the physical life of the individual, breathing day and night unceasingly, with alternate rest and action every moment. The digestive apparatus, with longer intervals of rest and a wider range of objects, connected with the preparation and enjoyment of food. The senses, with their great use both to the individual and to society, locked in slumber every night. Thus, step by step, the plan rises to the highest functions of human nature—those which concern the race—which, above all others, are under the dominion of reason, and not subject to that law of constant action which controls the lower functions.

Equally interesting is that law of our nature which determines growth by exercise. It is a fact clearly demonstrated by modern science that the governing organ of the human body, the brain, has distinct portions of its structure devoted to the service of distinct faculties of the mind. Thus the intellectual, the emotional, and the locomotive powers work through corresponding portions of the highly organized brain. Each faculty grows by exercise. Not only does the mental faculty become stronger by use, but its physical organ of expression

in the brain, with its dependencies in the rest of the body, become larger and stronger with a richer supply of blood and greater aptitude for instantaneous action. This condition of the physical organ reacts upon the mind, which takes greater pleasure in acting in a certain direction when it finds the brain so keenly responsive to its impulses. If the proper distribution of force is disturbed in any individual by the neglect to exercise important portions of our nature, an antagonism of faculties springs up, one part growing at the expense of another part. Thus the emotional may destroy the intellectual life in an individual who is subjected to undue excitement of the passions, particularly if the type of the nature is not largely emotional. The other faculties will rapidly lose their power. The intellect suffers, judgment is lost, and mental confusion produced, which is really a species of insanity. Those organs of the body, also, which are most intimately connected with the excited portion of the brain become involved, and their functions may be entirely deranged. The automatic power of the human body may also assume undue control in those who yield to fancies and caprice, and lead an unnatural and sedentary life. There is an antagonism between this automatic force and the life of relation or brain-life of the individual. The more the balance of powers is lost in the human brain—reason being no longer the controlling force—the greater becomes the power of this instinctive life of the body, the greater its capability of answer-

ing every fanciful suggestion, and even of exciting those suggestions. The individual may thus become the sport of his own unbalanced faculties, and a prey to every species of morbid hallucination.

An organization so complicated (as this human body), designed for such manifold uses, and at the same time drawing the elements of its existence from the external world, must be powerfully influenced by all the circumstances which surround it. Certain physical and mental conditions are essential to human growth, to health. Hence the question of food and clothing, of drainage and ventilation, of human habitations, of exercise and occupations, attain equal importance and dignity, as essential to the fulfilment of the great changeless plan of life.

Thus we are brought face to face with a great fixed fact, a fact which concerns every human being during every moment of life—viz., God's unchanging law of human growth. This law we are called on to study, to obey, and obedience to it is placed first in the order of human duties. Obedience can only be rendered by study of the objects of physical life, of its structure, its conditions, its rules. Its learning, thus regarded, becomes sacred learning, and ignorance is criminal.

The folly and wickedness of our practical contempt for the great laws of human growth may be measured by the penalties of suffering, illness, and premature death attached to this neglect. This is rendered more striking by observing, first of all, the great force of the principle of vitality,

the strong tendency to live and resist injurious influences, which we all possess. Nothing is more remarkable in the history of the human race than its great power of adaptability. Scattered all over the surface of the globe, under the most varying conditions, men still live and thrive. The cities of Cuença and Quito, at a height of 9,600 feet above the level of the sea, possess large and flourishing populations; so also do the cities of Holland and New Orleans, which lie below its level. Multitudes of workmen live in galleries of the deepest mines, many hundred feet below the surface of the earth, deprived of light, breathing air much more condensed, living under a much stronger pressure than that of the ordinary atmosphere. And, on the other hand, scientific observers have taken up their residence for a long period on the crest of Pichincha, at an elevation of 14,826 feet. Agassiz spent some weeks in investigations on the Jung-Frau. Gay Lussac attained the highest elevation ever reached by man in his balloon, 28,000 feet. All can recall the thrilling narratives of Arctic voyagers, where the thermometer has been known to measure 91° below zero. Contrast this with the burning sun of India, where 120° Fahrenheit is observed; where glass is cracked by the heat. A wide range of more than 200° of temperature, and yet the heat of the human body maintains its steady and necessary amount, never materially varying under the two extremes. Similiar illustrations of the power of human nature to adapt itself to unnatural conditions might be

drawn from all the other elements necessary to life.

Notwithstanding this remarkable power of vitality, which can brave such extreme variations in physical conditions and endure enormous privations, careful observation all over our country presents a fearful record of death, sickness, and physical degeneration produced by our own social arrangements—arrangements and habits so destructive to the human organization that they overpower even this great capability of adaptation.

This is seen in the statistics of our towns, in the condition of our peasant population, in our social and domestic experience.

The statistics of all our large towns demonstrate the great and unnatural destruction of life that takes place in these centres of civilization, where the highest medical skill is found, and placed freely at the call of poor as well as rich. The natural death-rate at present is 17 per thousand—*i.e.*, that under the most favourable conditions as amongst the upper classes in our healthiest cities, in the healthiest country districts, 17 out of every thousand persons die each year all the world over, a lower mortality being exceptional; but the following was the death-rate of our chief cities (1868) instead of the natural rate of 17 per thousand: Bristol, 23; London and Birmingham, 24; Dublin, 25; Edinburgh, 27; Liverpool, 29; Glasgow, 30; Manchester, 32. That means that in London alone, in a year of no special sickness,

more than 21,000 were killed who ought to have lived. In the British Islands an army of over 176,516 lives were swept off unnecessarily. This is not all: a much larger proportion of the population is always ill at one time; about 78,000 in London is reckoned, of whom one-third are suffering from preventable diseases. This calculation does not take into account those feeble, ailing persons who are never more than half well, who lack strength and energy for the daily fulfilment of duty. It is shown that in the whole of England the people have only a mean life-time of forty-one years—not half the term of life that seems to belong naturally to our race. Of those who died within the year, over 134,000 were in ripe manhood; but yet more noteworthy are the deaths under the age of twenty-five: over 242,000 perished in childhood and youth. The wholesale slaughter of children in our civilized country is truly appalling. Out of 233,515 deaths at all ages, 94,804, or 40·60 per cent., were those of children under five years of age.

To understand fully the grave import of these records three facts must be noted: first, that the death-rate of a country is always under-stated; second, that town populations increase at a much more rapid ratio than country populations; third, that the death-rate increases in direct proportion to the density of the population.

In proof of these three propositions let me quote from recent testimony of our most eminent statisticians:

‘Wherever the population is increasing the amount of mortality is under-rated in consequence of there being an excess of young people in those numbers, which make the mortality appear lower than it really is. The mortality of London appears much less by statistics than it actually is; it is reduced in two ways by having a large influx of persons at the period of age when mortality is low, and by the departure and return of patients to the country to die, as consumptives for instance. The causes of disease in London are excessively active, as is seen, for instance, in the mortality of male children under five years of age, which is about 8 per cent. (*i.e.*, 80 per 1,000), while in some of the more healthy districts it is not more than 4 per cent.’ Again: ‘Of the 20,066,224 persons enumerated in England in 1861, nearly 11,000,000 were in the towns and 9,000,000 in villages and country around the towns. The total population in London and 71 of the largest towns in England was over 7,667,622, and the population in the country and in smaller towns was over 12,398,602, so that there are nearly eight-twentieths of the population in those 72 towns. The total increase from 1801 to 1861 in the population of England was over 11,173,688, and one-half of that increase was in those 72 towns. It will thus be apparent that the town population is increasing at a much more rapid rate than the country population.’ ‘The country population now is very nearly the same as it was in 1801. By a law, which at present is quite constant, the mortality

increases rapidly with the density of the population. In our thinnest districts the mortality is about 15 per 1,000; in our densest districts it ranges from 28 to 33. This relation is a constant law: where there are 179 persons to a square mile, there the mortality is from 17 to 19; where the density of population varies from 3,000 upwards, the mortality ranges from 26 to 33; so that under our present arrangements there is a constant connection between the density of population and its mortality. That connection is not necessary; our towns might be made nearly as healthy as these country districts, having a mortality of 17 to 20.' Of the circumstances under which large masses of our population grow up, another distinguished physician writes: 'They create special diseases, demoralize the population, and in course of generations completely overthrow the physique of the people. It is impossible to walk through the central streets (of this large town) without observing that you are in contact with a population awfully degraded, both in its physical and moral attributes; a population whose mere external characteristics impress you at once with the idea of a depth of degradation of bad habits growing for generations, in consequence of these arrangements.' 'Thousands and hundreds of thousands are thus brought up.'

Turning from the towns to the agricultural population, where we have the right to expect the fullest measure of health, we find a condition of things which strikes an observer with dismay. The culti-

vators of the soil constitute the backbone of a nation. I have carefully observed them in America, and have learned to consider them the ruling force of the nation; independent, thoughtful, exercising judgment and common-sense. Again and again I have seen the corrupt or mischievous vote of the large towns reversed or overwhelmed by the country majorities. The condition of the peasants who cultivate the soil all over our country presents a terrible contrast to this picture. Fever, produced by extreme misery, seems to be endemic amongst them, sapping their strength and stupefying their minds, when it does not kill; they are crippled by rheumatism and destroyed by scrofula; their miserable cottages are damp, dark, close, and overcrowded; their pitiful wages will not supply them with decent dwelling, sustaining food, and other necessities of life.

Let me quote testimony from high authority given within the year: 'As many as ten persons are often crowded into a sleeping-room not 12 feet square;' 'the external walls are too thin, the rooms too small, no ventilation, brick or tile floors;' 'cottages are frequently built in marshy situations, and by stagnant water, or at the foot of hills where there is no free circulation of air; the spot is chosen on account of the small value of the land and its uselessness for agricultural purposes;' 'they are not able to pay what would be a fair interest on a decent cottage.' 'If a new colliery is opened in an upland valley, 200, 300, or 400 cottages are built

very rapidly, and they are inhabited long before they are dry. The foundations as a rule are simply upon the sod, which is merely turned over, and a flag is put on that sod. There is no drainage of any kind; 40,000 to 50,000 persons will live in houses of this kind, in one valley.' 'There are numbers of villages throughout England where the people are drinking polluted water.' 'I have seen no place in England in a worse condition than this village. I have seen many native villages in South Africa, but none so bad as this!' Volumes might be filled with similar testimony as to the physical state of our country population—a population whose condition is the truest measure of a nation's substantial strength.

There is no error so dangerous in national life as the discouragement of honest labour. If the conditions of labour are injurious and repulsive, whether from exhausting hours of toil, unhealthy workplaces, squalid homes, or dreary monotony of toil, the workers of either sex will inevitably seek relief from hopeless drudgery in the excitement of vicious indulgences.

Our social experience joins its testimony with these statistics of town and country, to show how widespread is this destruction of health. Every housekeeper knows the extreme difficulty of obtaining a healthy servant; nine-tenths of those who apply for a situation are suffering from some chronic form of disease, which, if they belonged to a different class of society, would place them in the list of

permanent invalids. There is no more frequent cause of the ill-health of domestic servants than the damp and sunless rooms in which they pass so much of their time, owing to the injurious practice of building dwelling-houses, both in town and country, without a cellar under the whole house, drained, and ventilated from side to side. No room is fit for human habitation which has not a six-foot cellar, dry, with ample through ventilation underneath it. It seems surprising that, in a damp climate like ours, with rheumatism and scrofula prevailing everywhere, this necessity has not been perceived.

It is often thought that sanitary knowledge means chiefly ventilation, food, and drainage; that it applies only to the lower classes, and that we must await the action of Government to build better houses and otherwise deal with the gigantic question of pauperism. This is a profound mistake. Health depends upon the observance of all the laws of our complex nature; it applies to the mind as well as the body. A deteriorating influence which proceeds from within is more to be dreaded than one that comes from without. The nervous system (from mental or physical causes) may be completely shattered, leaving the individual a wreck. The senses (from mental or physical causes) may be rendered so craving and irritable that the noble proportion of the nature is lost. An hysterical, feeble person is an unhealthy one; equally unhealthy is a coarse, brutal one. In either case, health, in

the true meaning of the word, is thoroughly impaired. Those classes of society who are able to command every physical appliance that wealth will purchase are often, from their kind of suffering, more dangerously diseased than the labouring classes. I need only mention the spread of luxury, the delay of marriage, the frail progeny of unsuitable unions, to show how inextricably the mind and body are blended in all that concerns health.

The highest authority on this subject thus condenses the lessons of his great work on health: 'Hygiene is based upon the physical and moral perfectibility of man, of which it furnishes the proof.' 'Health may be described in two words—morality, competence.'

The general deterioration of health prevailing in all classes and both sexes is most strikingly seen amongst women. It is proved by the increase of nervous and special diseases, the prevalence of scrofula by general fragility of constitution, and inability to bear the unavoidable burdens of life.

The health of the mass of educated women is a matter of serious national concern. These women form the heart of the nation, they mould its family life, they create society, they exercise an unbounded influence on the lower classes. If the health of the mother breaks down family happiness is destroyed; so if the health of this class of a people is deteriorated the welfare of the nation is imperilled both in the present and the future.

Young parents enter upon the heavy responsibili-

ties of family life in deplorable ignorance of their duties to one another and to their children. As parents, it is their first duty to secure right conditions of health for the infant, for the child, and for youth, until they leave the parental roof. Each age demands a varying set of conditions, which become continually more complicated as the necessities of the mind increase in proportion to the physical wants. The conditions that will keep an infant in perfect health will not suffice to secure the health of the boy or girl of fifteen. As a weak stomach will impair the temper, so a vacant or corrupt mind will injure the body. Comprehensive knowledge is needed to embrace the wants of every age, and such knowledge all parents should possess.

In seeking the cause of this destruction and deterioration of life, thus briefly stated, we find it in the universal ignorance or neglect of the Divine laws of human growth. We find this neglect and disobedience equally among rich and poor, learned and unlearned, religious and worldly, in individual life, in business enterprise. The fevers of the poor, the hysteria of the luxurious, the indigestion of the learned, the devastation of our mining districts, equally show contempt for the wonderful organization which God has made—indifference to the conditions which He has clearly laid down as essential to its welfare.

One of the most important problems of the present time is how to embody the sanitary knowledge which we possess in the life of the nation so that

a higher standard of health may be gained by the present and succeeding generations.

The solution of this great problem must be attempted in many directions. It must be sought in the power of legislative action, in the wide-spreading influence of education, and in the strength of social combination.

The part which legislation should take in promoting national health demands serious consideration. Legislation is the human imitation, or visible representation, of the greatest facts in the universe—law, and it derives from this representative character its immense power in moulding the mind and habits of a people; for, as the Divine laws of the human organization limit its powers and direct its modes of action, so the human laws which rule a people determine their modes of thought and their relations to one another. Legislation, therefore, not only represents the life of the present generation, but is the most powerful educator of the rising generation. Every law contains this latent power hidden within it, and so often overlooked. In every subject of legislation, whether it be the most trifling village regulation or the gravest international question, there are principles hidden behind the facts which induced legislation, and it is the attitude that legislation assumes towards those hidden principles, which stamps its character as good or evil, which makes the human law obedient or disobedient to Divine law.

The health of a nation is a most important

concern of a wise government. No other agency can act with such extensive and combined power. But much wise caution is needed in dealing with such a subject as national health. Human agencies are very imperfect, and much has to be learned as to the right way of dealing with most important subjects of health legislation. If the authorities introduce a supply of pure water into a village suffering from typhoid fever they do a righteous thing. They deal with causes. By careful investigation they have collected a body of facts which prove that impure water will produce typhoid fever. In this act of introducing a supply of good water there are many principles enfolded. Thus they destroy the cause of a great evil; they express approbation of that good thing—pure water; they educate the people into liking it; they show them, through experience, the blessings that flow from it. They thus render obedience to Divine law by their legislation. But it is very different if they attempt to regulate a village gin-shop. Gin, as a drink, is always bad, whether adulterated or not, and, in dealing with the greatest evil that afflicts our country—the curse of drink—legislation must adopt the same course that it did for typhoid fever: it must patiently and persistently accumulate the facts which will show what produces this dangerous disease of drinking.

Divine law rewards the good (*i.e.*, the obedient), punishes the bad (*i.e.*, the disobedient), swiftly, surely, inexorably, no matter at what cost or pain;

and human law must never temporize with evil, neither directly nor indirectly sanction it, or it loses its character of law and becomes simply blind or blundering expediency. In dealing with evils legislation is bound to investigate the causes of evil and attack them. Herein lies the superiority of legislative over individual effort—that it is able to accumulate that body of varied facts through which causes can be clearly ascertained and the attention of the community directed to them. It is only on this sound basis that wise legislative measures can be framed; only in this way that great questions of national health can be judiciously dealt with.

Our English Government—in advance of every other nation—is learning to recognise this great function of legislation, and is gradually accumulating such a storehouse of facts as will render comprehensible measures of wise statesmanship possible. The mass of the people, however, must become sufficiently intelligent to support such measures. The difficulties which now stand in the way of health improvements from want of this intelligence, are inconceivable to those who have not considered the subject. No matter whether the health improvement suggested be great or small—whether it be the redemption of a lovely mountain river, whose sparkling waters have been turned into a black source of pollution, or a swamp that ought to be drained, or a poor cottage that needs the introduction of fresh air—there is always the same opposition and misconception. Thus a short-sighted

view of expense will excite furious opposition from small ratepayers and ignorant farmers, even to the most necessary measures—measures which would rapidly diminish the poor-rates and increase the prosperity of a place. Incompetent men or poorly paid men are appointed to carry out Health Acts, or timid men, afraid to excite ill-will in the neighbourhood. The Acts thus become a dead-letter, or lawsuits are instituted against improvements, harassing and even destroying local health boards. Large proprietors enclose the commons, farm out their estates to agents, and thus neglect the duties which are inseparable from rights. The same ignorance which opposes such endless obstacles to the establishment of sanitary improvements often defeats the best laid plans when they are carried out, and proves, if proof were necessary, that a people must be educated to appreciate laws before the objects which those laws were intended to effect can be accomplished.

Much confusion also at present arises from patch-work legislation that has not been based on sound principles. This is shown by the present Acts regulating towns: 'A recent edition of the laws affecting health and sanitary affairs gives the text of fifteen Acts relating to health, diseases prevention, nuisances, local government, sewage, and kindred subjects; twelve Acts consolidating provisions as to towns, lands, markets, police, loans, bakehouses, etc. The public health and local government supplemental Acts are twenty-nine in number, while the

laws treated by the work are affected by not less than 296 public general statutes, which the author tabulates in the index as being referred to in the text. No lawyer can grasp these enactments save by great research, much less can a man who has his own business affairs to look after.'

The sanitary investigations carried on by the Privy Council and other government bodies, the labours of the Royal Commission appointed to inquire into the condition of the poor, etc., cannot be overestimated; but none feel more strongly than the very men who are carrying on these measures the necessity of effort in other directions—directions where the co-operation of every member of society is needed—viz., in education and in domestic and social life.

We do not possess enough sanitary knowledge to reform the physical and moral condition of the human race if it were generally diffused and its rules systematically applied. Scientific investigations and the knowledge of hygienic laws are far in advance of the practices of daily life. The knowledge is within our reach, which, if employed, would save the lives of tens of thousands of human beings around us, keep this army of sick in vigorous health, and make our homes the precious centres of ennobling influence that they are intended to be. We fail, however, in the means of diffusing and putting into practice the substantial knowledge which scientific observation has laid before us. The first duty, therefore, which rests upon us all is an endeavour to

secure the universal diffusion of sanitary knowledge. As every human being in the British Isles should know how to read and write, so every human being should be taught that health is a duty, and shown how to secure it. Sanitary teaching (varying, of course, in its style) should be introduced into every school and college in the kingdom—in the common school, in Oxford and Cambridge equally, into every series of lectures, whether at the Royal Institution or the South Kensington Museum, into every Working Man's Institute, and into every medical and every theological seminary.

Above all other classes of men, it is certainly important that physicians and medical men generally should be thoroughly educated in sanitary knowledge. The authority which they possess, and their opportunities for instilling this knowledge when families are keenly alive to the dangers of illness, would give them greater success as health missionaries than any other class of society. But medical men are not taught that it is equally their duty to prevent disease as to cure it; and their attention is not, therefore, sharpened to observe and to deprecate the numerous habits in family life which tend to produce disease. There are but two chairs of hygiene established in connection with our medical schools, and attendance upon those lectures is not obligatory—*i.e.*, is not essential to the attainment of a degree. Every practical instructor knows that the press of studies is so great that the student always neglects whatever is not absolutely necessary

to his success. One of the most beneficial changes that could be introduced into medical education would be the establishment of hygiene as a first-class chair, of equal importance with anatomy, a searching examination in its teachings being indispensable to the attainment of any degree which gives authority to attend the sick. Almost equally important is the introduction of sanitary instruction into theological seminaries. The clergy generally seem to be sadly ignorant of the laws of health. The powerful and legitimate influence which they exercise would be more valuable if it were not so one-sided. If the clergy all over the land, who command a mighty army of parish visitors, could show those visitors the direct and positive connection between pure blood (made out of food, light, and air) and pure thought, what a revolution would be wrought in every country village! But the clergy themselves must be educated in such knowledge, for it is not simply intellectual assent, but a thorough realization of it that is necessary. The same knowledge is as necessary to our schoolmasters. No one is fit to direct the education of youth who does not perceive the difference between the young and the old, and suit education to the child's nature and not to his own. The kind of studies, their variety, frequent movement, and change, the arrangement of school-rooms, the unlimited supply of fresh air, the playground, etc., must all be based upon an acquaintance with sanitary knowledge, which would be a proper subject for examinations and certificates.

The education of children and youth in Health is a subject in which women are especially concerned. It is a large subject; it demands not only the introduction of sound sanitary instruction suitable for different ages into all our schoolrooms and colleges, but the creation of a love of such knowledge and the habit of its practical application. But this is not all: our great need—education in Health—implies the confirming and improving the health by means of education. It is not sufficient that the course of studies laid down for children and youth should not injure them—it is also necessary that it should do them positive physical good; they should be stronger, better, and brighter for the hours spent in technical education, or there is something wrong in the plan of education. If lessons produce headache, lassitude, inactivity of functions, if they make children pale, quiet, spiritless, then the lessons are bad; they have done the children an injury, no matter how slight the evil effect appears to be each day; and the injury cannot be remedied by sending them out to play and repeating the same process day after day. A wrong cannot be made right by constantly committing it and then endeavouring to repair it. It cannot be too strongly urged that, unless the plan of education adopted with children does them a positive physical good in all its details, it does them a positive physical harm; it cannot be neutral. This is also true of the youth in college or boarding-school. The same principle is applicable: if the course of study is not positively beneficial to

the bodily organization, it is positively injurious. The over-taxed brain cannot be righted by boating and cricketing. The rules which apply to the fully-formed adult organization do not apply to the growing youth, and it could be clearly shown how much moral, as well as physical, harm arises from our failure to recognise the radical difference between the youthful and adult natures.

Education in Health, therefore—not simply theoretic instruction—is what we need to make our children stronger; and it requires such a reverence for health on the part of educators that there shall be a constant endeavour to make every part of instruction strengthen the physical as well as mental nature.

In seeking the best means of imparting sanitary instruction to youth we find that a certain preparation is necessary before anything like a full and direct hygienic education can be given. This preparation must be laid in childhood. A knowledge of the structure and functions of the human body is indispensable; yet young women generally shrink with repugnance from physiological instruction for which they have not been prepared. All reference to bodily functions is unpleasant to them. They have never learned to respect the laws of their organization, and they turn from the subject of physical structure as very repugnant, or a great bore. The tastes of children, however, are of a very different character; the intellect, as shown in untiring curiosity and incessant questioning, is pre-

dominant in childhood, and taste for any study may then be formed. Children will receive the elements of comparative and human anatomy and physiology, learn to handle bones and examine structure, not only without disgust, but with extreme interest; and they may thus be prepared for the fuller instruction which they should receive as youths. Everything should be done to cultivate the taste for natural history and science that is latent in almost every child. Their fondness for animals indicates this taste, and the care of animals should be encouraged and directed. The manual of physiology in every schoolroom should be pleasantly written, well printed, and with abundant illustrations. Bright, well-drawn pictures, clean and fresh specimens, shelves and little boxes for collections, should be provided.

To the intellectual training which results in the formation of tastes the formation of healthy habits of life must be added. These habits should be formed without, in general, giving any reason for them. Children should not be taught to reason on matters of Health. They utterly lack the power of proportion which is essential to reason, and they run the risk of becoming morbidly conscientious or hypochondriacal if compelled to reason on these practical matters. It is very important that they should go to sleep early, eat simple food, live in fresh air, and take a great deal of out-door exercise, but it is not desirable that they should know too early why they do these things. The proper time

for reasoning on these habits has not arrived, but the healthy habits early formed will gradually become a part of their nature. Habits of self-control and obedience to rules are also an essential part of the moral hygiene of childhood; they prepare the nature for the intelligent obedience to law which should come in later years. Children should not be worried with unimportant observances. The precepts which it is necessary to give them will make more impressions if they are not too numerous; the rules laid down must be wise rules; children are trustful, and their trust must never be abused. If, as they grow older, they learn to recognise the wisdom of the obedience that has been exacted, they will escape that dangerous scepticism which so often comes to youth, who find that their intellectual and moral guides have cheated their youthful trust. Intellectual tastes, healthy habits, and obedience to law being thus formed in childhood, the youth is prepared for that full instruction in health which is adapted to the period where reason is developed.

For the education of youth in health—*i.e.*, in physical strength—and in sanitary knowledge and habits a training college seems to be urgently needed. The acquisition of knowledge, enthusiasm for the study, and a practical realization of it must go hand in hand. Modifications may doubtless be gradually introduced into the ordinary plan of family and school instruction. But if, under the present system of schoolroom discipline, we attempt to

instruct young ladies in the laws of health, we are called on to contend with insurmountable obstacles, not only with an utter indifference to all subjects of health and repugnance to many topics connected with it, but with enfeebled powers from a neglected or misdirected childhood, and with vitiated tastes from the substitution of artificial excitements for natural healthy enjoyments; it is also impossible to find the necessary number of teachers inspired with that respect for Divine laws which would give them insight into matters of health and the true order of education. This combination of difficulties makes the task of education in health almost a hopeless one, unless the individual be placed in a fresh educational atmosphere where the objects and methods of education are entirely changed. Health education should train the body—of which the brain forms part—into well-balanced strength, giving full command of the various faculties and power to meet the demands of future life. To accomplish this work the hearty co-operation of the individual is essential; such education cannot be forced from without: it must be accepted by the will. All the mixed motives which act upon human nature are needed to vanquish indifference and excite enthusiasm: large and beautiful arrangements in building and grounds; the sympathy of numbers; the stimulus of honours and rewards; the increased prospect of establishment in life. All the motives which act upon young men, stimulating their zeal in college life, are also needed by young women. The

natures, if not identical, are strictly parallel. The broad rules applicable in one case are applicable in the other, and success in education can only be attained when it is adapted to the one common human nature.

Education in health would be best attained by giving prominence to the following subjects: First, the practical study of natural science, including sketching from nature. Second, the practical study of hygiene, which would include the structure and management of houses and households. Third, the direct training of the bodily powers in precision, agility, and strength.

1. The importance of the practical study of natural science in the education of youth can hardly be too strongly urged. The love of nature when strengthened by a knowledge of nature gives occupation, amusement, mental and physical development of the best kind; it is an antidote to the morbid influences of fashion and dissipation; it hinders the premature development of function; it furnishes a basis of intellectual companionship between the sexes, and would prove invaluable to a mother in the education of her children. The power of habits formed in children by their parents are second only to the original type of constitution, and often overpower even the original tendencies; these habits are nevertheless formed by the silent working of influences, hour by hour and day by day, that are invisible and cannot be measured, that seem valueless, taking item by item in the long

account, and yet in the aggregate they mould body and soul. A mother may instil the love of reading or the love of dress, she may form the habit of outdoor exercise or the habit of gossip, not by set precept or even formal regulations, but by her own tastes unavoidably moulding the tastes of her children, and flowing out naturally into those external arrangements that reflect the ruling spirit or affections of the individual. Did the mother possess a hearty interest in the wonders of field and forest, of sea and sky, what a treasury of delightful intercourse might be found in every country ramble! A mother's love, joined to broad tastes and knowledge, would never weary of the ceaseless questioning of childhood; the older the child, the closer and more influential would be the companionship. The holiday by the sea-side or amongst the mountains, so often wasted in idleness or frivolity, might be a rich harvest-time of delightful knowledge drawn from the treasures of land and water.

It is the outdoor study of science and art that must be insisted on with the young—the cultivation of the powers of observation rather than memory—which powers compel the exercise of the muscles and senses. The guiding principle of health education is to follow the order of nature, and place the strengthening of the physical powers not independently of, but in advance of, the mental powers. If the order is reversed, and the immature mind be allowed to tyrannize over the immature body, and disturb the proportion of Nature's work by with-

drawing too much creative force to the exclusive stimulus of the mind, the true relation of mind and body can never be restored, the adult will never receive that ready and capable service that the body should render to the mind. In thus urging the paramount importance of some branches of study, particularly in a girl's education, it is not intended to exclude all others. Many accomplishments, as well as various branches of knowledge, may be taught in such a way as to conduce to physical and mental health, and all studies may be so arranged and subordinated as to be innocuous. The principle here insisted on is that those studies must predominate and lead in the education of youth which most fully require the exercise of the physical as well as mental nature in their pursuit.

2. The direct study of hygiene involves a large range of profoundly interesting subjects that it is difficult to display in a full importance in a condensed sketch. The creation of a healthy nation (which all will allow is the legitimate work of a woman) requires comprehensive knowledge. The structure and arrangements of a house in relation to the climate, soil, and wants of a family—drainage, ventilation, warming, economy of labour: the management of a household in relation to individual wants and to society, including the subjects of food and waste, domestic service, petty trading, the care of the sick and prevention of disease, occupations and amusements—these and many other topics belong directly to the formation of a

noble Christian home. These are subjects that men and women have a direct personal interest in. They may be taught in graduation with abundant illustration. The examination of economic museums, exercise in the inspection of houses and neighbourhoods, etc., should be added for advanced students. Every method should be used to impress facts on the memory and excite personal interest. To this end a system of rewards would be useful, whether of prizes or honours. There seems to be no reason why honorary degrees, scholarships, and fellowships should not be bestowed for proficiency in knowledge that relates to the health of mankind, as well as for distinction in classical and mathematical study.

3. The third subject of education in Health is the direct cultivation of the various bodily powers in strength, agility, and grace. This culture presupposes close attention to the weak points in the health of each individual student—those tendencies to disease which exist at present in every person. All will have remarked that the same morbid cause, applied to half a dozen people, will produce varying effects, according to individual peculiarities; thus, a current of cold air applied when the body is overheated may cause either catarrh, bronchitis, neuralgia, rheumatism, intestinal derangement, according to the individual susceptibility. Youthful vitality masks, but does not cure, weak tendencies, unless those tendencies are known, and the exuberant vitality be especially directed to their cure. This

season of life is, however, particularly favourable to such cure. Nature will never again present so valuable an opportunity of remodelling the constitution. A doctor of health or preventive medicine, who shall become acquainted with the constitution of each student and determine how far exercise must be modified to meet individual peculiarities, is an indispensable member of the faculty of any college that undertakes to educate in Health. With this observation and caution modern gymnastics and exercise in various forms will become an invaluable part of education. The muscles of the body are capable of the same careful training as the senses. As the eye and hand in painting, or the ear and hand in music, require long and careful practice to acquire skill, so the great variety of delicate or powerful muscles in the human body require careful exercise to draw forth the varied powers that belong to them. The ordinary movements of life do not call forth half these powers. As the large majority of people go through life with only an imperfect use of their lungs, from the constraint of clothing and sedentary habits, which weaken the thoracic muscles, so it is with other organs, and imperfect muscular action and weakened health is the result.

The principles of education which are thus laid down are the following, viz.: a constant observance of the order of human growth, the selection of studies that will carry out this order, habits and arrangements of college life that will enforce it,

direct instruction in the necessary conditions of health, and careful training of the body. It is giving to education the grandest of all objects—use, which, if properly understood, includes the highest and most permanent culture of which the individual is capable. Were our beautiful sea-coasts studded with such colleges, with their wonderful playgrounds washed twice a day by the Atlantic waves, furnishing endless treasures for the eager gatherers, enthusiasm for health-giving studies would grow up in the youthful mind, and a stronger generation mould a nobler society.

The establishment of sanitary improvements by Government, and the remodelling of education, are not the only means by which we must seek to obey those Divine laws which are implanted in our nature. Every class of society, every institution—in short, our whole social life—needs to be re-born into the idea of health. The customs to which we all conform, whether rich or poor, the standards by which we measure success in life, and the means by which we seek to reach it, are all opposed to the idea of health. The hours we keep, our dress, our food, the excitements and strain of life, are injurious alike to mind and body. The deeper we look into the structure and state of society, the more serious are the effects of the general neglect of the laws of human growth. Practical life now is a cruel foe to pure enthusiastic youth; purity and enthusiasm are alike destroyed by the corrupt and faithless society into which they enter. We preach one standard of

right; we practise another. We exact a super-human effort from our children when, surrounded by temptations, we tell them not to fall into evil habits; we require an impossible thing when we expect them, as social beings, to do what is right when society does what is wrong. The diffusion, therefore, of sanitary knowledge through all classes of adult society is as necessary as the remodelling of education. It is through the gradual diffusion of this knowledge that combinations of individuals may be formed who will be strong enough to put down some of the senseless and injurious customs that now pervade society.

This principle of combination may wield a great and increasing power for good. Departure from any established custom by a single individual is an eccentricity, but the union of fifty for the same purpose will exercise a decided influence, and a hundred resolute men and women form a social power in the State. It is encouraging to recognise the power that might be exerted by such a band resolved to carry out the 'Laws of Health' in their daily lives!

There is only one form of combination, however, that I shall venture to suggest, and whose utility I think will be at once apparent.

I refer to the formation of a National Health Society.¹ Such a society seems to be much needed

¹ The same year (1871) at a drawing-room meeting held in Dr. Blackwell's house the National Health Society was formed, which has its offices at 53, Berners Street, London, W.—EDITOR.

—needed to give combination, direction, and impulse to the efforts of individuals; to form a storehouse of information to which all could apply; to assist health legislation by looking at this great subject from a family point of view, and educating the community into an intelligent appreciation of wise legislative measures; to attack such a great and growing evil as that of unconsumed smoke; to suggest improvements in education, and draw every charitable institution into health missionary work. Every other subject of human interest is represented by some society, more or less active, which takes up the social side of each particular work and urges its claims. It seems characteristic of the general neglect with which Health is treated that no national society of men and women has yet been formed to promote this vital subject—Health.

Such a society should extend its branches into every town and village of the land, and form a body of corresponding members, not only throughout the kingdom, but abroad. It might, with great advantage, promote the wide application of that excellent system of instruction initiated by Mr. Twining, of Twickenham. This gentleman has devoted his life to the diffusion of sanitary knowledge. Having established a museum of domestic arts in his grounds, open to the public, he has written a series of lectures, which are read by the curator of his museum and illustrated by his librarian, the illustrations for each lecture being ingeniously packed in a small box; he generously sends this little

establishment to any place which will make arrangements for the delivery of the lectures. Such a system, varying the lectures and illustrations, might be applied to every little village in England, for two young ladies or gentlemen might certainly be found in every place to read discourses so prepared. If a Health Society did no other work than keep in constant activity such a simple plan of instruction as this, it would do a work of immense utility. There is, however, no limit to the practical suggestions that might thus be brought before the public to the influence that might be exercised upon family life, or to the sanitary institutions that might be formed by an energetic Health Society.

I have thus endeavoured to show:

1. That there are laws governing human growth according to an unvarying plan.
2. That neglect to study and obey these laws produces individual suffering in all classes of society and national degeneration.
3. That obedience must be rendered through legislation, education, and social life.

It is only when we have learned to recognise that God's law for the human body is as sacred as—nay, is one with—God's law for the human soul, that we shall begin to understand the Religion of Health.